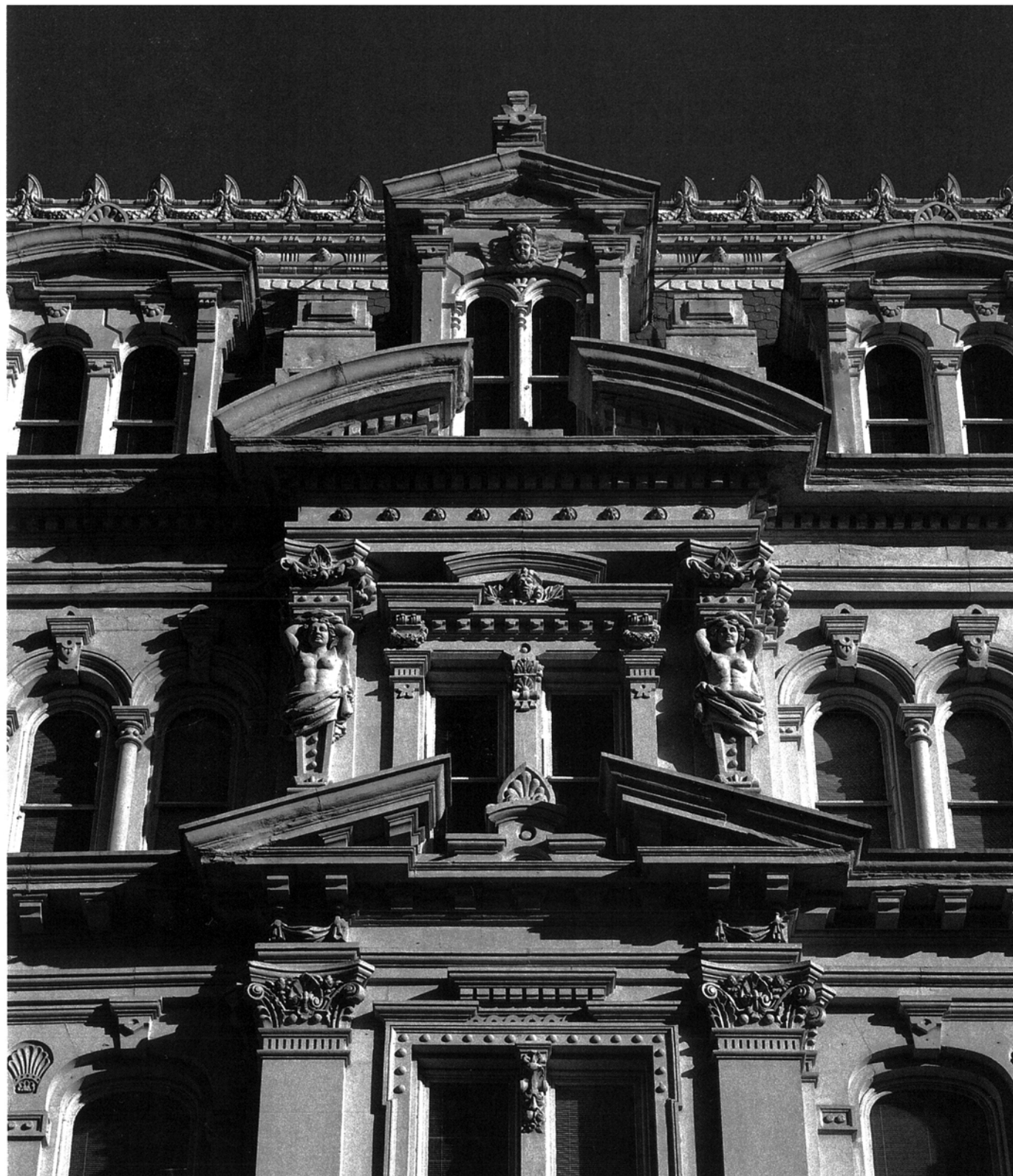
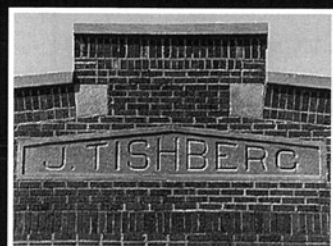
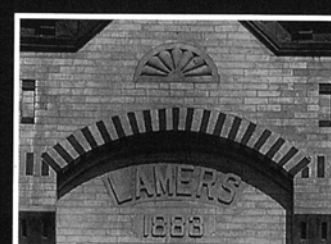


GOOD FOR *B*USINESS

A Guide to
Renovating
the Exteriors of
Older Commercial
Buildings



GOOD FOR BUSINESS



A GUIDE TO RENOVATING THE EXTERIORS OF OLDER COMMERCIAL BUILDINGS

Prepared by Paul J. Jakubovich and Les Vollmert for The City of Milwaukee, Wisconsin

John O. Norquist, Mayor

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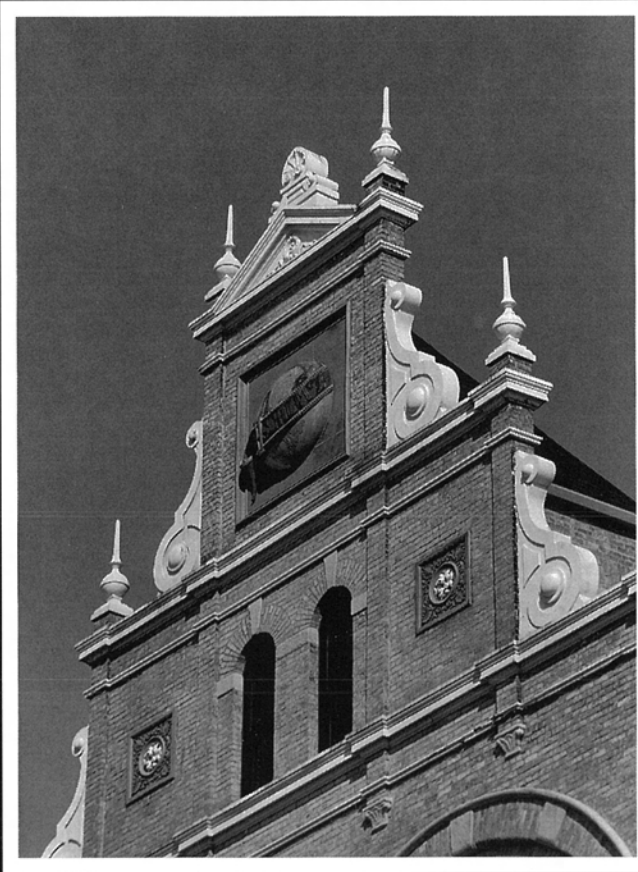
GOOD FOR BUSINESS

A GUIDE TO RENOVATING THE
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INTRODUCTION

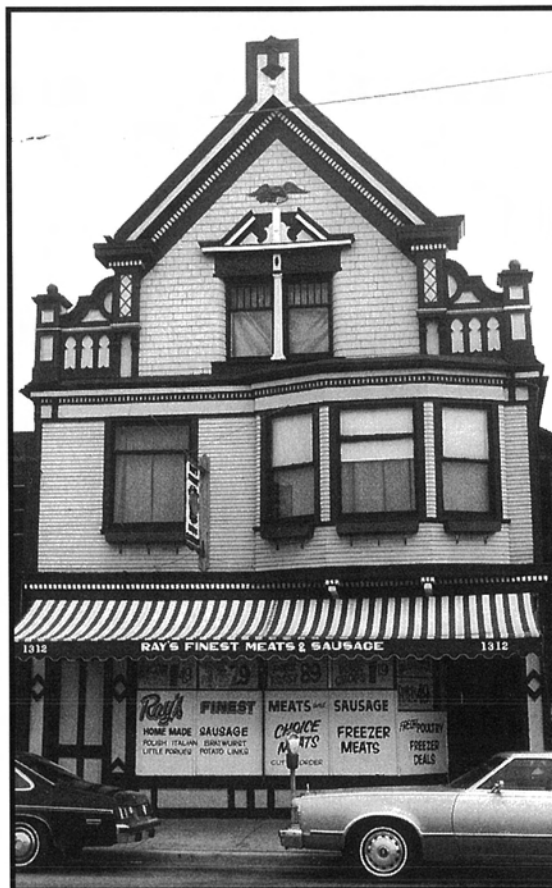


INTRODUCTION

This book is intended to assist property owners to properly rehabilitate the exteriors of older commercial buildings in Milwaukee. It includes information on the designs, materials and construction methods that are needed to undertake a successful rehabilitation today. A successful rehabilitation is one in which the distinctive original exterior features of your building are treated appropriately. The intent is not to require complete restoration, but rather to ensure that as a building is repaired and updated the original character is not obscured by unsympathetic alterations. Too often the history of an older commercial building unfolds as a series of well-intentioned but hapless remodelings and insensitive “modernizations” that have gradually eroded the visual appeal and intrinsic value of the structure. Milwaukee has lost almost as much of its valuable architectural heritage to bad remodelings as it has to demolition.

Today, intact historic architectural character is a marketable asset in Milwaukee’s older neighborhoods. In fact, many people will pay more for a well-maintained older commercial structure that has retained its original exterior features than they will for a “modernized” older building that has a tacky modern storefront and has been stripped of its cornices, ornate trim, and original storefront. This book is conceived as a guide to help you make well-informed design decisions in the hope that the architectural integrity and old world craftsmanship of Milwaukee’s older commercial buildings will no longer be needlessly lost in the name of improvement. ■

■ Preceding page: A detail of the Schlitz Brewery, 1700 block of North Dr. Martin Luther King Jr. Drive.



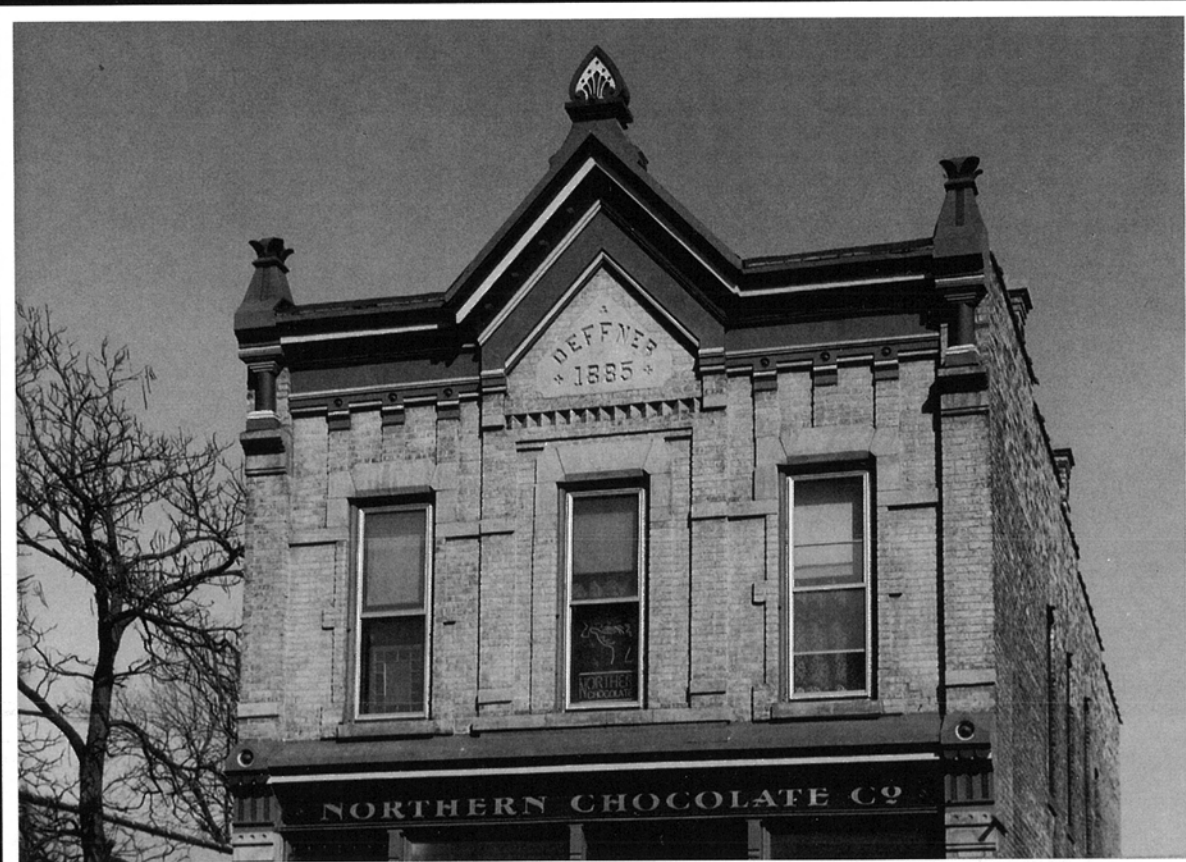
■ BEFORE: 1310-12 S. 16th St. in 1979.



■ AFTER: 1310-12 S. 16th St. in 1994.

This handsome turn-of-the-century commercial building has lost its architectural character as a result of a series of insensitive alterations.

GETTING STARTED



OLD IS NOT BAD

A commercial area's traditional buildings are among its most valuable assets. Their facades provide an opportunity to create an inviting, attractive environment, while the buildings themselves provide space to accommodate a variety of uses. The purpose of this book is to provide guidance on how to go about making facade improvements to older buildings that will build upon a building's inherent strengths while accommodating modern usage.

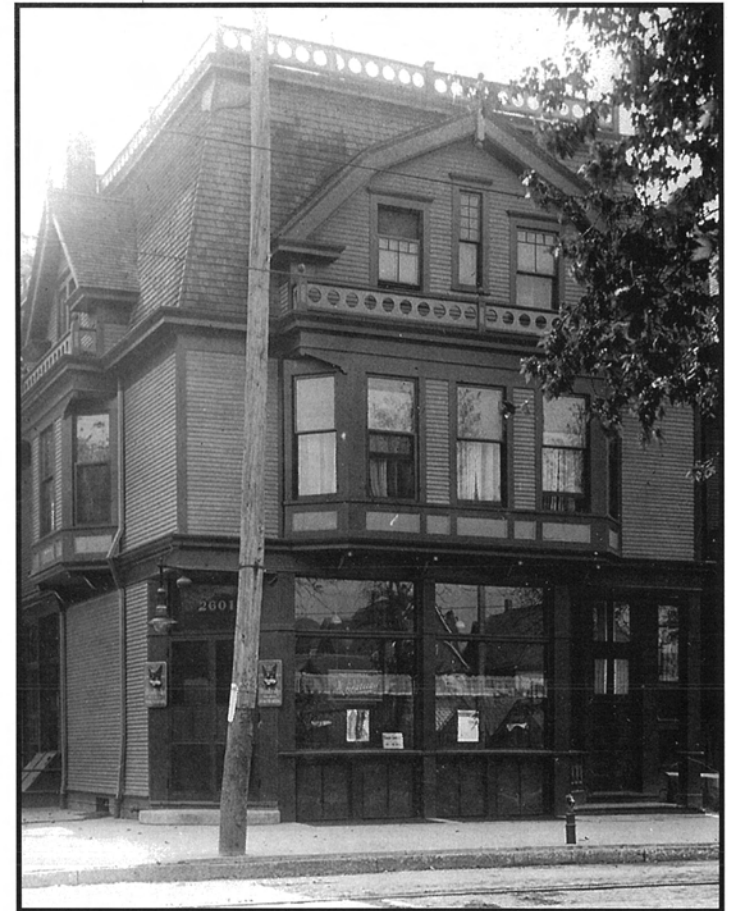
One of our goals in writing this book is to show you that you can rehabilitate your old commercial building in a way that will bring out its best features without costing a fortune. We want you to know that the craftsmanship and unique features commonly found on older building are intrinsically valuable and worth keeping. The fact is that the craftsmanship, materials and design features of days gone by can seldom be matched today and to destroy such features is to throw away part of the value of your old building.

The original style of your building also contributes to the value and aesthetic appeal of your entire neighborhood and for this reason it should be preserved as a neighborly gesture for the benefit of all. By carefully maintaining your building's remaining historic features and, perhaps, restoring things that have been lost or have deteriorated, you will be preserving and enhancing its value for years to come. You may also be saving yourself a great deal of money, since it often costs just as much or more money to do an inappropriate remodeling as it does to do a sensitive rehabilitation.

■ Preceding page: 2036 N. Dr. Martin Luther King Jr. Drive

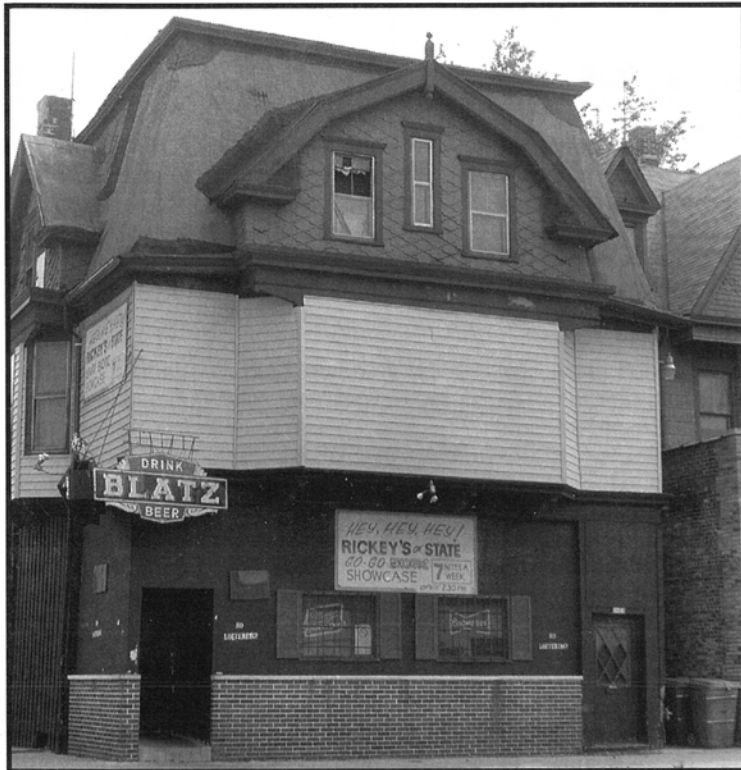
When planning the work, it is important to keep the following points in mind.

1. You can make your building attractive to tenants and customers and safe, convenient and energy efficient without eliminating what is old and valuable. For example, old storefronts can be made energy efficient without necessarily changing their appearance from the exterior.
2. Although you can express your personal taste on the interior of your building, you should resist the temptation to permanently alter the stylistic character of the exterior of your structure to reflect a passing architectural trend by, for example, trying to make your Victorian building look "Colonial" on the outside by installing a fake Georgian door and multipaned display windows with snap-in grids. Remember, commercial tenants come and commercial tenants go. An image created for one business by modifying a facade may not suit another business. Traditional exteriors were designed to be neutral enough to suit many businesses.
3. Try to think of your old building as a single unit with no removable parts. Every change you make to the original appearance chips away at its



■ 2601 W. State Street as it looked shortly after it was built in 1898. (Photo: Collection of Ray Johnson)

integrity. The cumulative effect of lots of small changes, such as blocking down original window openings in the storefront or on the second story to accept smaller, stock-sized windows is a loss of character, and, in today's real estate market, often a loss of resale value and curb appeal for potential tenants and customers.



■ A 1994 view of the same building as remodeled shows the cumulative result of numerous small but insensitive changes that have robbed the building of its historic character.

WHAT DO THE TERMS RESTORE, REMODEL AND REHABILITATE MEAN?

Although these three terms are often used interchangeably today, they actually mean very different things. The word “restore” means to return a building to its original appearance by stripping away later additions and authentically returning it to the way it looked at some particular time in its early history. This treatment is usually reserved for museum quality

structures, such as the Iron Block, because of the expense of meticulously restoring or replacing old materials and features exactly the way they originally were.

“Remodel” too often means almost the opposite of restore. It is frequently the process of stripping away a building’s original features so that it will have a new architectural character completely unlike its original look. The goal of a successful remodeling is often to make the building’s original appearance unrecognizable. Typical remodeling activities would include installing a false front over the original facade, replacing the windows with new windows unlike the original ones in size and appearance, and making additions that are out of character with the original building.

“Rehabilitate” means to take steps to return a structure to a state of

good repair and to update it to accommodate modern uses and standards of comfort and efficiency. Rehabilitation includes aspects of restoration: retaining and repairing original features; renovation: incorporating new elements such as updated electrical circuitry, heating plants or signage; and remodeling: totally changing an original feature, such as the reconstruction of a storefront. The important thing to remember about proper rehabilitation is that it preserves the old structural and decorative features that give a building its style by

using modern elements sparingly and only in a manner that is sympathetic to the original design. Proper rehabilitation is what this book is about.

WHAT TO DO BEFORE YOU START

Most successful rehabilitation projects, even seemingly minor ones, involve three distinct phases: (1) research, (2) planning and design, and (3) hiring a contractor and beginning construction. Short-cutting any one of these phases or doing them out of order can result in a less than satisfactory finished project. Doing rehabilitation work on a building is a serious, time consuming and expensive business and should be approached with the same care and forethought that you would put into buying a car, planning a long vacation trip or making a major investment. Time and effort spent up front before the first nail is hammered or board is cut will reap rewards by saving money, avoiding delay, and minimizing frustration later.

One of the first things you should do is to become familiar with your building and its architectural style. Go outside and look at your structure; note especially its materials, shape, and decorative features. Each building, no matter how modest, has features that give it its architectural style. Among the most important of these are: the exterior materials; the storefront; the upper story windows and their decorative trim; and the roof shape and cornice. It is the way these features are put together that gives a building its special character and defines its style. The chapter “Architectural Styles of Milwaukee’s Commercial Buildings” provides information that will help you pick out the style of your building.

GETTING STARTED

No. 628

Application for Permit to Build.

BRICK AND STONE.

MILWAUKEE, MAY 15 1905

TO THE INSPECTOR OF BUILDINGS:

The undersigned hereby applies for a permit to build according to the following statement:

- Name of Owner: William Ritmeier
- Street: 422-424 W. National Avenue
- Lot: Block: Subdivision: Ward: 5
- Cost of Building: \$6,000
- Purpose of Building: Store Building
- Class of Building: Store
- Name of Architect: O. C. Uehling
- Name of Mason: Stachota Bros. Co.
- Name of Carpenter:
- Name of Iron Contractor:
- Size of Building—No. of feet Front: 30 No. of feet Rear: No. of feet Deep: 46
No. of stories in Height: 2 No. of feet in Height from grade level to highest point of roof beams:
- Depth of foundation wall below grade: 5
- Will foundation wall be laid on earth, sand, rock, timber or piles? earth
- Will the roof be flat, peaked or mansard? flat
- What will be the material of roofing? asph/um
- How many stairs will building have?
- How will stairs be enclosed? none
- How will elevators be enclosed?
- Number of Water Permit: Number of Water Meter:
- Fire Escape: Y. 327
- Cubic Contents: 45,370 Permit Fees: Y. 327

	Thickness of walls.	Materials of walls.	Size of joists.	Distance from Center.	Span of Joists.	Shape of Girders.	Size of Girders.	Material of Girders.	Max. of Columns.	Length of Columns.	Material of Columns.	If old party wall is used (show thickness)
Basement	16	brick										
1st Story	12		8x10	16								
2d "	8		3x10									
3d "												
4th "												
5th "												

■ The original building permit for 422-424 W. National Avenue reveals that this brick commercial building was built in 1905 as a store with a flat upstairs for William Ritmeier to the designs of architect Otto C. Uehling at a cost of \$6,000.

some pleasant surprises and increase your interest in the property. During a thorough research process, a wealth of details about the history of a building and its occupants can be uncovered that can be used to guide the planning and design of a rehabilitation. Doing research will also heighten your awareness of the time period during which your structure was constructed. This can be very helpful when trying to select materials and fittings that are historically appropriate for the building.

The history of an older building is developed by piecing together bits of information from a variety of sources that include, but are not limited to, the following: original building permits, City tax roll records, Milwaukee Sentinel newspaper articles indexed by subject from 1848-1890,

plans filed at the Wisconsin Architectural Archive, Milwaukee City Directories, Milwaukee County Deeds, old fire insurance maps, and historic photos. Before you start researching the building yourself, you should call the City of Milwaukee Historic Preservation Commission to see what information they already have on file.

Finding the construction date of a building is of prime importance so that the rehabilitation work will

accurately reflect the period in which it was built. If the Historic Preservation Commission does not have information on your structure, you should start by looking for the original building permit. If the building was built after the City started issuing building permits in 1888, there is a good chance that an original building permit will still be on file with the City's Department of Building Inspection (Municipal Building, 10th Floor, 841 North Broadway). An original permit typically lists the original owner, architect (if any), builder, type of foundation, overall dimensions, number of stories, estimated cost, and type of exterior wall construction. Although not all buildings will have an original permit on file, most will have at least some permits for later repairs that document changes to the building or the construction of additions.

A researcher often has to interpret and expand on small pieces of information to explain and date the apparent changes to a building over the years. It is not unusual for seemingly small interior work recorded by permit to coincide with undocumented, significant exterior changes to the building as well. A permit, for a new storefront, for example, may pinpoint the date of other alterations done as part of a general campaign to bring a building up to date.

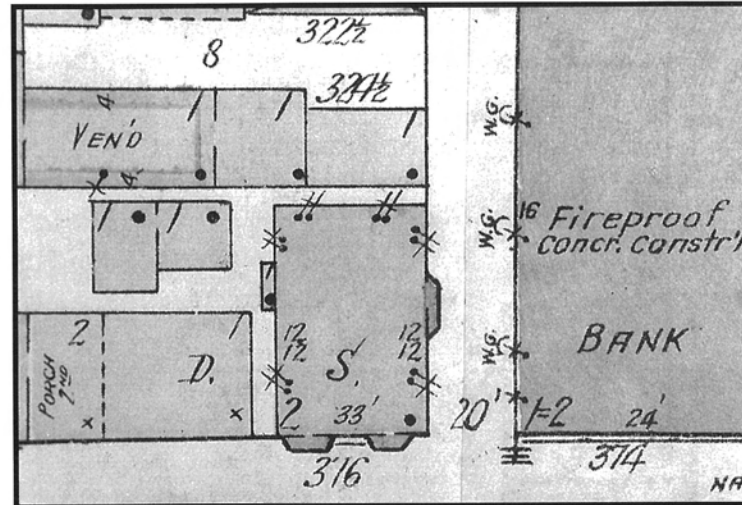
If an original permit does not exist, there are other options for determining the age of a building, but the process is more complicated and sometimes only an approximate construction date can be determined. If you fail to find an original building permit, as would be the case with most buildings built before 1888, the next step would be to research old City tax roll records at the Milwaukee Central Public Library,

RESEARCHING THE HISTORY OF YOUR BUILDING

In the process of getting familiar with your building's architectural style, you may become interested in researching its history. Finding out when a structure was built, who the architect was, and who was the first occupant is enjoyable, detective-like work that can usually be done by the building owner. It can produce



■ 422-424 W. National Avenue today.



■ The 1910 Milwaukee Fire Insurance Atlas shows the basic shape, number of stories, and construction materials of 422-424 W. National Avenue which was then addressed as 376 National Avenue.

814 West Wisconsin Avenue. You must have an exact legal description of the property and its ward number in order to track the property in the tax rolls from year to year. Although tax rolls usually make no specific mention of buildings, there is a dollar value given for both the "Real Estate," which means the value of the land only, and for "Improvements," which generally refers to the value of buildings. The first year that significant taxable "Improvements" appear on the tax roll is often commensurate with the date the first major building was erected on a property. Tax roll research, especially interpreting a change in value, can become very complicated and confusing, and you may need the assistance of someone experienced in this type of work to help you.

Another research method for determining a construction date involves using a combination of information from Milwaukee City Directories, insurance

atlases, and property deeds. Milwaukee City Directories, published annually since 1847, almost without interruption, list alphabetically by surname the names, addresses and occupations of all city residents and businesses. Property deeds are filed at the Milwaukee County Courthouse, 901 North Ninth Street, for all property in Milwaukee County. Each time a property is sold, a new deed is recorded. Deeds generally do not make specific mention of the dates buildings were constructed on them, but the sales value of the property, which is recorded on each deed, can be an indicator when a significant improvement was built on the property. In general, deed research is valuable because it provides the names of all of the owners of a property. The home addresses of the early owners and their occupations can be tracked year by year through the listings in the old city directories. It is

were published regularly from 1876 into the later 1950s. These are useful in combination with deed research, the tax rolls, and city directories to pinpoint the approximate construction date of a building. For example, if a building does not appear in the 1876 atlas, but does appear in the 1882 atlas, it can be concluded that it was built between 1876 and 1882, thus narrowing the time period that must be researched. Insurance atlases can be found at the Central Library and the County Historical Society Library, 910 N. Old World Third Street. Care must be taken in using these atlases because some editions were updated in subsequent years by pasting little patches of paper showing the outlines of new buildings that had been built over the original pages. Since the paste-overs are not dated, it is impossible to know when a building on a paste-over in an updated atlas was built.

up to the expertise of the researcher to determine whether an existing building could have been constructed on the date indicated by the research. Deed and city directory research usually has to be used in conjunction with tax roll research to pinpoint the exact construction date of a building.

Insurance atlases, which are books of maps of the city showing the outlines of buildings,

GETTING STARTED

Sometimes the only historic record of how a building originally looked is an old photograph or a line drawing published in a book, newspaper, business trade journal or city directory. This old line drawing was found in *Milwaukee of Today*, which was a commercial history of Milwaukee published about 1892.

The two major photo collections accessible to the public which feature historic Milwaukee architecture are

in the Local History Collection of the Milwaukee Central Public Library and at the Milwaukee County Historical Society. There is a chance you might find a historic photo of your old building in one of the collections if it was located in a bustling commercial area. Most historic commercial building photos, however, are still owned privately in small private collections and family photo albums. Researching the public photo

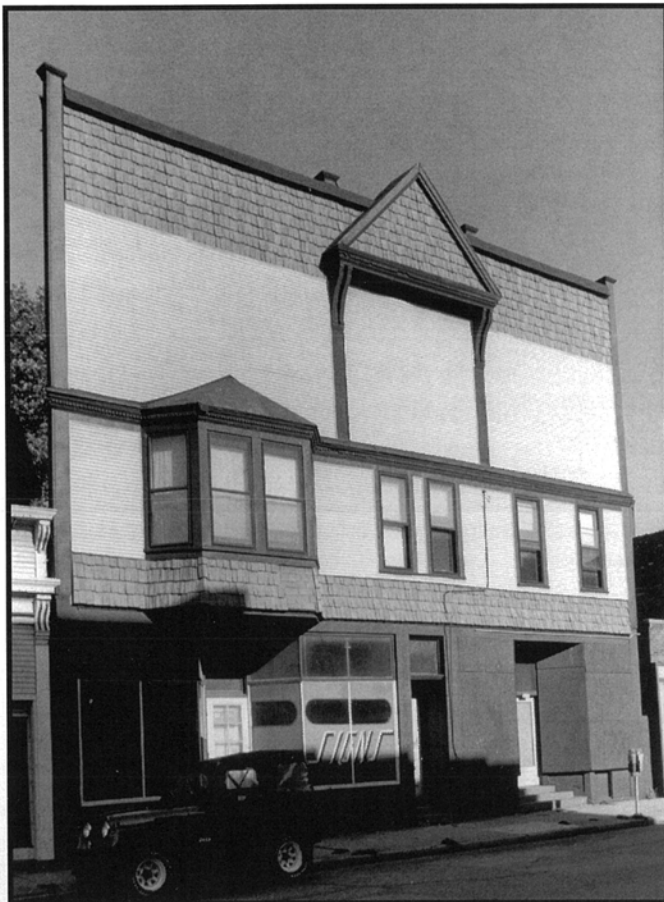
collections, however, can be very valuable in terms of learning more about historic architectural styles and details in Milwaukee, and you might just get lucky and find an old view of your building.

The City Records Center in the Municipal Building contains a sizeable collection of microfilmed architectural drawings of old commercial buildings. Most of these are for structures built after 1900. They

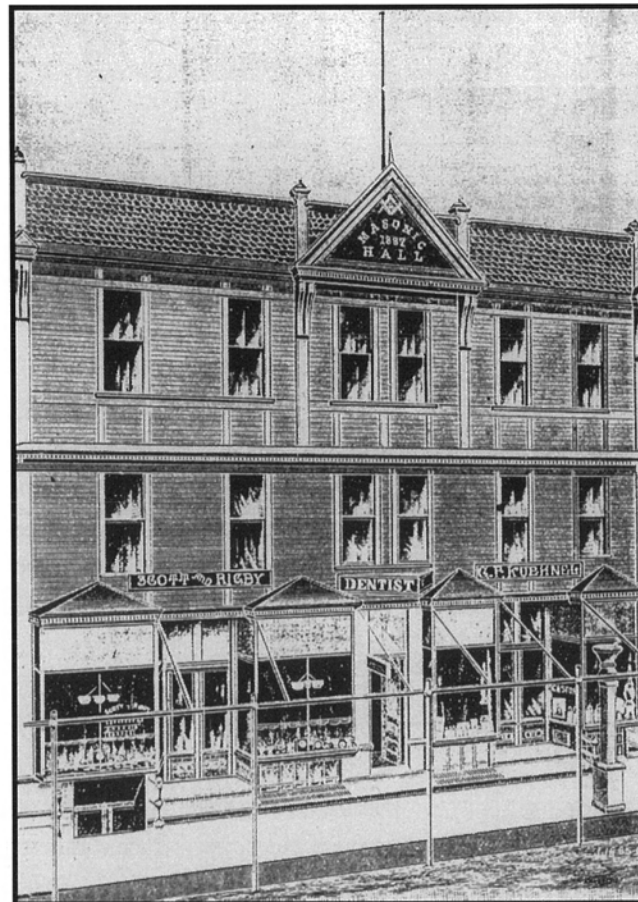
are catalogued by address. If you are looking for original architectural drawings, that should be the first place you check.

The Wisconsin Architectural Archive located at the Milwaukee Central Public Library is also a repository for many old architectural drawings. The collection mostly contains architectural drawings for large, expensive homes, churches, commercial, and institutional buildings, but there are drawings of more modest structures as well. The drawings are mostly catalogued by the architect's name.

Finally, if you are interested in learning more about the life of a former occupant of your building, you could consult the following published histories of Milwaukee which contain biographies of many of the city's shopkeepers, tradesworkers, business



■ 2234-36 South Kinnickinnic Avenue as it looks today.



■ 2234-36 South Kinnickinnic Avenue as it looked in the early 1890s.

leaders and professionals. Because of the similarity in names of these books, most historians refer to them by the names of their editors.

History of Milwaukee (1881) Frank A. Flower, ed., Chicago: Western Historical Publishing Co.

History of Milwaukee: From Its First Settlement to the Year 1895 (ca. 1896) Howard Louis Conard, ed., Chicago American Biographical Publishing Co.

Memoirs of Milwaukee County (1909) Jerome A. Watrous, ed. Madison, WI: Western Historical Association.

History of Milwaukee City and County (1922) William George Bruce, ed. Milwaukee: S. J. Clarke Publishing Co.

History of Milwaukee, Wisconsin (1931) John B. Gregory, ed. Milwaukee: S. J. Clarke Publishing Co.

If the previous owner or business that occupied your building is not mentioned in the published histories, you may be able to glean at least some information by consulting the Milwaukee City Directories, published almost without interruption since 1847, which list the names and occupations of all city residents and businesses.

PLANNING THE REHAB

Careful planning is vital to a successful rehabilitation. Before any actual work begins, it is important to establish a master plan for the project. Before you order any materials or enter into any contracts with tradesmen, you need to sit down and think through what you want to change, why you need to do it, and in what chronological order the work should proceed. In deciding what needs to be done, you need

to create a prioritized list of activities with essential maintenance items, such as roofing, at the top of the list and amenities, such as awnings, further down the list. You must do the basics first by addressing life and safety hazards such as faulty electrical or heating systems as your highest priority, followed in order by weatherproofing (repairing or replacing the roof, gutters, flashings, siding, paint, windows or drainage), and then tackling plumbing, dry-rot, and foundation problems. After you have addressed these needs, you can go on to restore damaged or missing architectural features or perhaps install a new storefront.

When planning a rehabilitation, building owners are typically faced with the need to make value judgments about which features are salvageable and which are expendable. It is a common pitfall to remove too much historic building material that is still perfectly sound or could have been repaired and saved, often at a lower cost than installing the new and usually lesser-quality materials available today. Far too much of our architectural heritage has been ripped out of older buildings and consigned to the dumpster because it was thought to be irreparable. When too much original material is torn out, the cost of the job is needlessly increased, leaving little money for recreating missing details in the original style or adding amenities. Contractors, who are not familiar with restoration techniques or the value of older materials, are often too quick to judge material as “unsalvageable.” Remember that it is easy and cheap to rip things out of a building, but it is very difficult and expensive to put new things in. So do not allow yourself to get carried away when you start demolishing

old work, because if you do, you will pay for it later. Always try to work with and save original material when possible. This is done for sound economic as well as historic reasons. Of course not all old work is good, but generally if the design of an architectural detail is consistent with the style of the building and the workmanship and the inherent quality of the material is good, it should probably be saved.

DO YOU NEED TO HIRE A PROFESSIONAL?

After you have decided on a master work plan for your rehabilitation, you need to decide what you can do yourself and what you need to hire a professional to do. Although there is quite a bit of work you can do yourself with a little practice, enough time, and the proper tools, there are some jobs that you should probably contract out. Electrical and plumbing work are usually best left to professionals because of the complexity of the codes and the legal requirement to have at least electrical work done by a licensed electrician. In general, you should probably hire a professional when the task requires technical skills you lack and cannot readily learn; the task requires equipment you do not have, cannot rent or is highly complex or dangerous to operate; the building codes are so complex that you cannot understand them; the quality of your workmanship is so poor that the resulting work is likely to detract from the appearance or structural integrity of your building; you need to have the work done within a short time; your time is worth more than what it would cost to hire the work out; and



■ Scaffolding makes big projects much easier.

whenever you find yourself involved in a task and realize that you just don't know what you are doing.

Typically, rehabilitation work on commercial buildings is contracted out, but there is quite a bit of work you can do yourself and, for economic reasons, may, in fact, want to do yourself. Although do-it-yourself restoration jobs can be satisfying and cost-saving to a property owner, you should keep in mind that learning a rehabilitation trade skill from scratch takes time

and practice and early experiments with a new skill do not always produce professional-looking results. In general, restoration work is time-consuming even for professionals, so be honest with yourself about the amount of time you can devote to a project. You can probably safely tackle tasks that require meticulous attention to detail and extraordinary sensitivity to architectural features; that utilize skills or equipment you are familiar with or would like to learn; and that are time

consuming, but do not require much skill, such as stripping paint from wood.

If you are serious about doing considerable amounts of rehabilitation work yourself, you are going to have to be equally serious about the tools you buy or rent to get the job done. Do not be fooled into thinking that you can make reproduction cornices or doors yourself, unless you have a considerable assemblage of professional-grade machinery and tools as well as the skill to use them. Remember that 100 years ago much of the ornamental trim seen on old buildings was produced in factories by skilled workers using heavy machinery that would be considered sophisticated even by today's standards.

Sturdy, heavy-duty ladders are essential for rehabilitation work and steel frame scaffolding is also almost indispensable for many exterior and interior projects. It is often much easier to work from a scaffold than it is to spend many backbreaking hours standing on a narrow ladder rung.

Purchasing a few section of scaffolding is a good investment if your project is lengthy, but scaffolding can also be rented by the day, week or month.

It is also advisable to purchase quality, contractor-grade small power tools, such as a drill, router, circular saw, cordless driver/drill because you will be subjecting them to the same uses and conditions encountered by professional contractors. Professional power tools have a greater initial cost than homeowner grade

tools, but they last much longer, produce better quality work, and get the job done faster to reduce operator fatigue. One common pitfall among amateur rehabbers is failing to keep the cutting edges of chisels, planes, and saw blades in sharp condition. Dull tools are difficult to work with, can be unsafe to the user, and produce poor quality work. Some property owners have bought special tools and other equipment and then sold them when the work was finished to recoup some of the cost of the project. Some of the tools you might need to rehabilitate your building can also be rented.

SELECTING A CONTRACTOR

Inevitably, professional help will have to be hired to complete part or all of some rehabilitation projects.

Hiring the right architect or contractor is a skill in itself. The Yellow Pages contain literally pages of listings of contractors and architects, but figuring out which one is right for you will require considerable detective work. It is very important not to skimp on this task, since hiring the wrong contractor can turn your rehabilitation into a costly nightmare. Start by getting recommendations from friends, relatives, neighbors or even strangers who have had good rehabilitation work done on their buildings similar to what you want to do. Go look at completed jobs and, if possible, talk to the clients to see how they felt about their working relationship with the contractor. Was the contractor reliable about appearing for work and staying on the job until it was completed? Did he or she abide by their estimates? Was the contractor generally honest?

Of course, you should talk to the contractor yourself to determine if he will be easy to work with. Most contractors have their own way of doing things, so make sure his way will be sensitive to respecting the historic fabric of your building and that he understands that you are not looking for a standard “remodeling” job. Above all, do not settle for the response, “You can’t get that kind of work today.” In recent years, there has been a veritable renaissance in the manufacture of traditional building materials and a significant increase in the number of restoration-conscious tradesworkers. Rehabbers and contractors today do not have to rely mainly on architectural salvage dealers for old building parts as was the case years ago. The list of companies that make building products designed for the restoration and reproduction market has grown by leaps and bounds over the past several years. In 1976, there were reportedly only 205 companies nationwide whose products could be considered historically styled. By 1991, that list had grown to nearly 3,000 companies and continues to expand rapidly. You may have to catalog shop by mail for some architectural items, but in the old days, Milwaukee builders and architects did the very same thing to get unique architectural features for their buildings.

Once you have narrowed your search to a few candidates, check to make sure the contractor has an established business. Consumer fraud in the building-improvement business is one of the biggest rackets in the United States. Fly-by-night contractors abound. Check to see if the contractor has an office, preferably with at least one staff member, and how long he or she has been in business. Check with the Better Business Bureau for registered complaints. Check to

see if the contractor is licensed, insured and bonded. Although hiring a licensed contractor does not assure you of getting the right person for your job, at least it is another indication that your candidate may be a serious professional with a reputation to protect.

When you are fairly comfortable with your field of candidates, get competitive bids in writing from at least three different contractors on the same set of plans or written specifications. Tell each exactly what work you want done and the quality of the materials you expect. Have the contractor indicate when he expects to start the work and how long it will take. If a contractor suggests adding work beyond what you have asked for, have him give you a separate price for that. Once the bids are in, discard any that seem excessively low or excessively high. Keeping in mind that the low bid may not be the best one to go with, decide among those in the mid-range based upon the contractor’s reputation, the quality of similar work he has done in the past, his reliability, and your impression of how well the two of you would get along. Bear in mind when reviewing the bids, that good contractors cannot work cheap because a contractor’s labor rate must take into account overhead costs such as the insurance, tools, and trucks that contractors must maintain in order to stay in business. Contractors who submit very low bids often do not carry insurance, have poor quality or inadequate equipment, and may not be familiar with restoration work. Also, good contractors are often busy and you may have to wait for them to have an opening on their schedules to start your job.

Once you have selected a contractor, define your mutual obligations in a written contract referenced to a

detailed set of plans or specifications describing the work. Most contractors will submit their bid on a contract form that you accept merely by signing and returning with a downpayment. Before you sign such a form, you need to be sure that the work described in the bid is exactly what you want done. If the contract language for the scope-of-work is too vague, you should meet with the contractor and arrive at a written agreement that specifies exactly what is to be done and what materials are to be used.

Remember that communication is the key to a good building owner-contractor relationship. Because most contractors are not designers or architects, they require precise instructions in the form of a detailed contract which may include drawings, old photographs, written specifications, and a provision for verbal directions. Too often building owners make the mistake of leaving pivotal decisions regarding design and materials up to the contractor, and later complain about not getting what they wanted. Contractors are not clairvoyant, and you must communicate to them exactly what you want.

For that reason, it is very important for the building owner to be able to recognize accurate and appropriate historic design, even if an architect or other professional designer is hired to do the actual

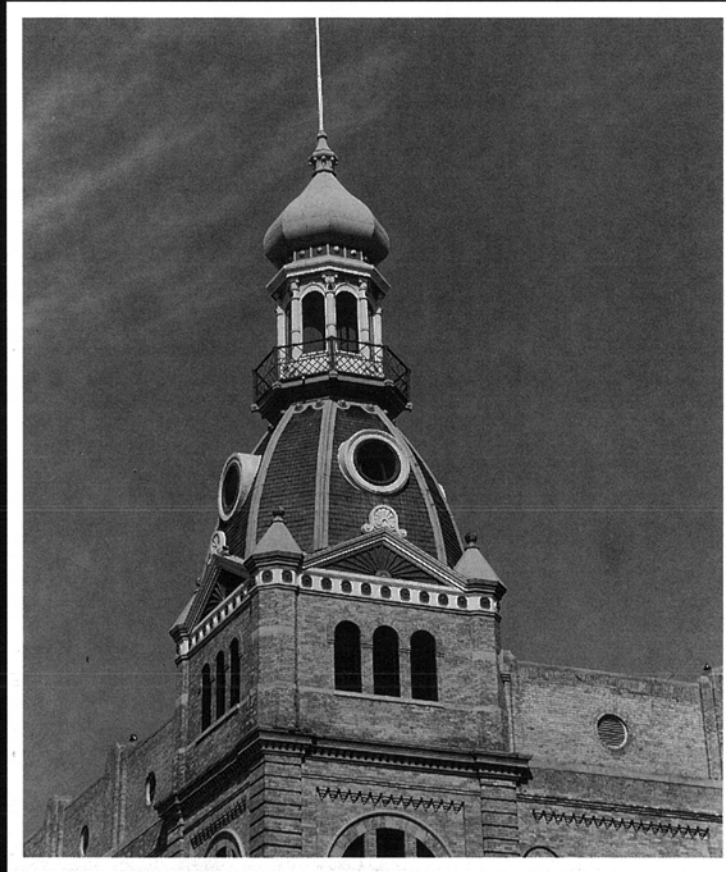
rehabilitation design work. Familiarize yourself with the characteristics of the architectural style of your building. Look for architectural details that may be missing from your building by looking at other structures of the same style. It is important to pay special attention to the small details that contribute so much to an authentic appearance such as the precise dimensions of the lumber and the quality of the original materials. A common mistake among well-intentioned restorers today is mixing historic architectural styles or improperly interpreting them to create a falsely historic appearance by trying to make a building look older than it is, such as making a Victorian store building look Colonial; or newer than it is, such as making an Early Twentieth Century Commercial style structure look Art Deco. The result is often a hodgepodge which is neither historic nor aesthetically pleasing.

Carpenters of years ago were familiar with the architectural styles of their times and could often independently design and build architectural details, such as a storefront, to match the style of the building. Most carpenters today do not have that ability and are not familiar enough with historic building styles to design new features that will fit in with the architecture of an old building. Nevertheless, if they are skilled and capable of following architectural plans, they should be able

to replicate a period design properly drawn up by a designer or perhaps even duplicate a feature by using another similar feature as a model. If you are uncertain about whether or not the design of your rehabilitation is appropriate to the period and style of your building, you can contact the staff of the Milwaukee Historic Preservation Commission to arrange for a review by the architects on the staff. Although they cannot design a rehab for you, they can review plans prepared by others and render an opinion as to whether the work is appropriate in design. There is no charge for this service.

Once the job starts, you need to be understanding of the contractor's problems. Rehabilitation is a nerve-racking business fraught with difficulties ranging from bad weather, workers or subcontractors who don't show up at the appointed time, materials that arrive late, and the little surprises sometimes encountered in working with old buildings because of quirks in old-time construction practices or hidden problems. A little sympathy and understanding on your part will probably go a lot further toward ensuring a successful job than perpetual nagging or accusation. Above all, stay calm and keep your sense of humor. Recognize at the outset that some things are going to go wrong, the work will take longer than expected, and will cost more than you originally thought. ■

HISTORIC COMMERCIAL ARCHITECTURAL STYLES



INTRODUCTION

This chapter describes the commercial architectural styles that are most prevalent in Milwaukee.

Architectural styles that are represented by only a few buildings in Milwaukee are not described. "Style" in architecture is a convenient classification system used to identify a building and place it in a historic context. Style is determined by the assemblage of architectural details, features, and building forms that were used at a particular period of time to give a building a certain look or recognizable character. Some of these styles were a reflection of deep philosophical beliefs or social movements, while others appear to have been more the product of changing fashion. The particular names used to describe the various styles in this book are those most commonly used today by architectural historians.

The following architectural descriptions are meant to serve as a general guide in identifying the style of your building. Since the way a building looks is the result of many factors and influences, "pure" examples of a particular style are relatively rare. Sometimes only the basic form, roof type, or a few decorative details are all that can be used to ascribe a style to a particular structure. Since styles tend to overlap, sometimes elements of two or more styles can be represented in a single building. For example, Romanesque Revival characteristics can be found in many of the buildings built in the Queen Anne style in the 1890s and early 1900s, since architects often randomly mixed features of different architectural styles in the same building.

■ Preceding page: A tower at the former Schlitz Brewery, N. Dr. Martin Luther King Jr. Drive at W. Galena Street.

Being able to identify the predominant architectural style of a building is very important when planning a rehabilitation. Familiarity with style will help determine what missing details to replace and what types of materials are most appropriate to use in repair work. The illustrations are intended to serve as helpful guides in identifying the various versions of a particular style. If you need help to identify the architectural style of your building, you should contact the staff of the Milwaukee Historic Preservation Commission.

ITALIANATE (1855 - 1885)

The oldest remaining commercial buildings in Milwaukee are examples of the Italianate style.

This architectural mode swept the country in the 1850s when Milwaukee was experiencing its first boom in commercial construction. It remained a popular style for commercial buildings until the later 1800s, although the heyday of the Italianate style was from 1850 until the early 1880s.

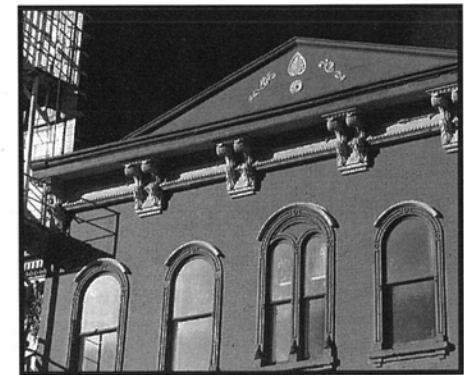
The Italianate style was a Victorian era adaptation of motifs drawn from the late Romanesque architecture of fourteenth and fifteenth century northern Italy, in particular, as well as the more classically inspired high Renaissance architecture of sixteenth and seventeenth century Italy in general. These motifs were combined eclectically to ornament the facades of the typical flat-fronted commercial building of the

nineteenth century. Some buildings were designed with a greater preponderance of rounded Romanesque forms, such as arched windows with curved hood molds and corbel table friezes, to achieve a vaguely late medieval "Lombard" look while others were dressed up with the more angular features of the later Italian Renaissance including windows with shelf-like caps and wide overhanging cornices with massive brackets to achieve a more classical "Roman" appearance. Both of these varieties, and all manner of combinations in between, were considered to be Italianate.

In general, Italianate buildings are distinguished by their ornate treatment of windows and cornices. The characteristic round and segmental-arched windows are often decorated with highly articulated lintels or hood moldings. Pilasters, belt courses and corbel tables add to the compartmentalized effect of the facades. The buildings are usually crowned with ornate, projecting, bracketed cornices, sometimes with a pediment for added vertical emphasis.



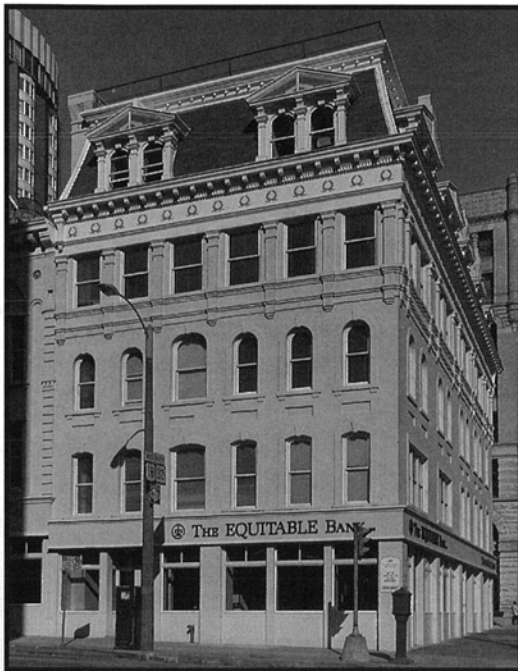
■ Small's Building,
704 N. Milwaukee Street (1866).



■ Bowman's Block, 715-17 N. Milwaukee Street (1859).

SECOND EMPIRE (ca. 1860-1880)

During the two decades following the Civil War, the Second Empire style, characterized by the use of a mansard roof, became fashionable. In the United States, Second Empire was, for a time, the “official” style for grand urban buildings, institutional as well as commercial. Often they were the largest and most prestigious, or at least the fanciest, buildings in American cities and towns. The Second Empire style had passed from fashion by the early 1880s. At one time, there were quite a few pretentious Second Empire style commercial buildings in the city, primarily



■ The Curry-Pierce Building, 400 E. Wisconsin Avenue (1866; mansard roof, 1879)



■ The Mitchell Building, 207 E. Michigan Street (1876).

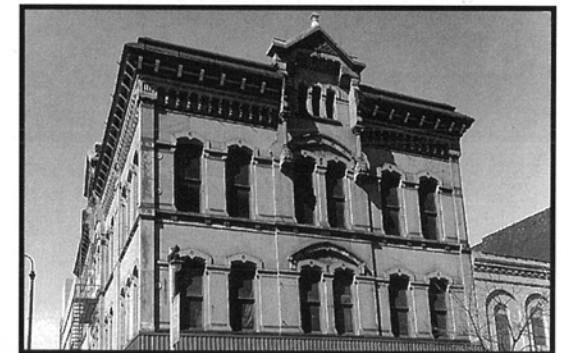
in the downtown area, but most have been razed or had their mansard roofs altered or removed. Very few examples remain outside the downtown area.

HIGH VICTORIAN GOTHIC (ca. 1865-1885)

Inspired by the writings of architectural theorist John Ruskin, English architects in the 1850s and 1860s designed colorful buildings derived from the medieval architecture of northern Italy. In this country, eastern architects followed suit by designing dramatically pinnaced and polychromatic buildings. As the High Victorian Gothic style reached the Midwest in the 1870s, it became well-represented in the commercial architecture of Milwaukee where it was a particular favorite of the city’s German-American merchant class.

High Victorian Gothic commercial buildings were executed both in wood and masonry. Local architects and contractors adapted the style to a variety of

building types and refined it to a high level. Their buildings are characterized by elaborately articulated, arched or pointed windows on the upper stories. On masonry buildings, the real design emphasis was often



■ (Top) The Milwaukee News Building, 222 E. Mason Street (1879).

■ (Bottom) The Lipps Building, 1103 N. Old World Third Street (1878).

lavished on the cornice, which was usually paneled, corbeled, arcaded and bracketed. More than almost

HISTORIC COMMERCIAL ARCHITECTURAL STYLES

any other style, the High Victorian Gothic fully exploited the decorative possibilities of brick construction, although many wooden buildings with pointed and decoratively incised window caps and steeply gabled fronts were also built in the style.

ROMANESQUE REVIVAL/RICHARDSONIAN ROMANESQUE (ca. 1885-1900)

Interest in the revival of Romanesque architecture, a round-arched medieval style, began in the 1840s in America, but many of its design elements were incorporated into the Gothic Revival and the Italianate styles rather than developing into a popular style all its own. By the 1880s, the forceful Romanesque-inspired designs of Boston architect Henry Hobson Richardson had created a distinctively new American style of architecture

which became known as Richardsonian Romanesque. Richardson's major commercial projects influenced the designs of some of the best remaining Milwaukee examples of commercial buildings in this style. Lesser lights in the architectural profession often used Romanesque elements as decoration to create typically picturesque late Victorian commercial facades that are only vaguely reminiscent of Richardson's work.

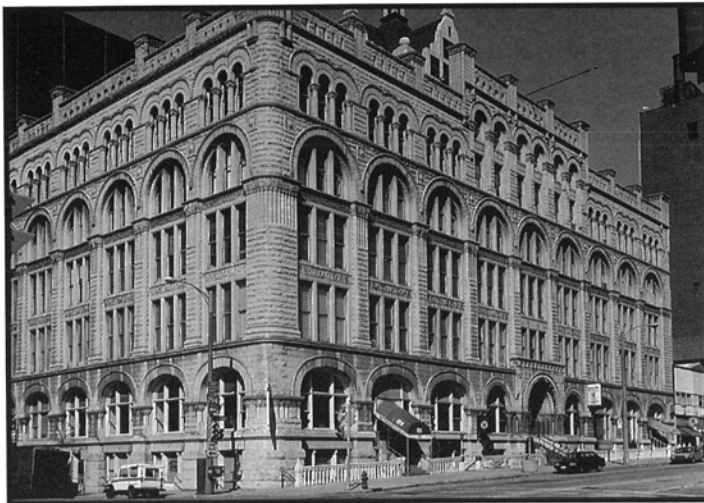
The favored building materials were rock-faced stone and red brick, although many Milwaukee examples were built of the readily available local cream brick instead. The most prominent design element of these buildings was the repetition of arched motifs. Visually the Romanesque style advanced the idea that commercial buildings did not need complicated shapes or rooflines to be impressive or authoritative, nor did they have to be laden with an eclectic array of historical ornament.

Romanesque Revival commercial buildings, in general, often have prominent arched facades, round-arched openings, and a generally plain, massive appearance.

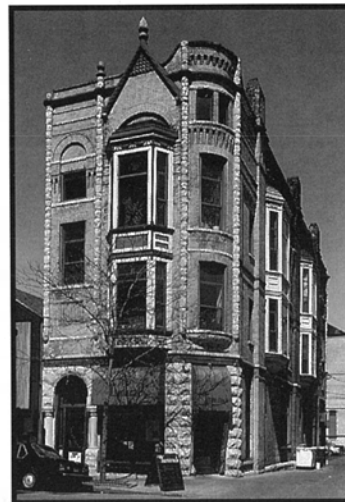
Romanesque Revival buildings were inherently expensive to build because of their masonry construction using, preferably, costly imported red brick and carved stone trim. The style lent itself best to the construction of large buildings. As a result, there were never a great many Romanesque Revival commercial buildings in Milwaukee. Most of the best surviving examples are found in the Central Business District, although some interesting Romanesque influenced small buildings can be found scattered throughout the older parts of the city.

QUEEN ANNE (ca. 1880-1905)

In Milwaukee, the Queen Anne style succeeded the Italianate and High Victorian Gothic styles as the most prevalent Victorian commercial style. It combined English architectural features, primarily drawn from the seventeenth and early eighteenth centuries, with original ornament to compose facades that were configured in a free-form, often asymmetrical manner. The Queen Anne style was immensely popular with both architects and clients because of its originality, abundant opportunities for the display of ornamentation, and its adaptability to a wide variety of building types, construction materials, and site configurations. Its emergence on the architectural scene coincided with one of Milwaukee's greatest periods of commercial expansion, with the result that there are a great many Queen Anne commercial buildings in the city. They are, in fact, quite common in all of the city's



■ The Loyalty Block, 611 N. Broadway (1885).



■ The Anton Kuolt Saloon, 322 W. State Street (1889).



■ The Milwaukee Abstract Association Building, 218 E. Mason Street (1884).



■ The Woczynski Building, 1437-39 W. Becher Street (1894).

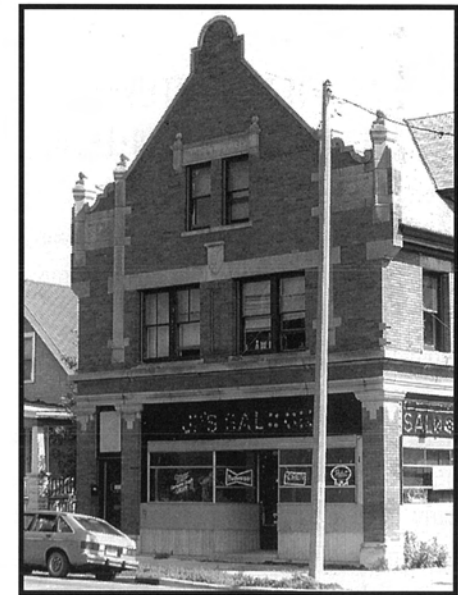
older commercial areas. Most are small-scale store buildings with flats on the second floors. They can be identified by their picturesque silhouettes, their large window areas, their projecting turrets and oriel windows, and their tall, false-fronted pediments at the roofline. Surface materials vary in texture and color and may be brick, clapboard, shingle, stone, terra cotta, stamped sheet metal or combinations thereof. A variety of window types were used, particularly paired and 3-part windows, often with ornamental glazing. Oriel windows and corner turrets are particularly characteristic. The exteriors frequently incorporate purely ornamental features including abstractly designed incised or relief carved sculptural elements of wood, stone or terra cotta and patterned shingling. Cornices can be either corbeled brick or elaborately profiled rolled sheet metal. Queen Anne buildings can be of either brick or frame construction and, if they do not have flat roofs, usually have very tall, steeply pitched and complexly massed, multi-gabled and dormered roofs.

FLEMISH/GERMAN RENAISSANCE REVIVAL (1895-1920)

The Flemish and German Renaissance Revival styles were more prevalent in Milwaukee than in most other American cities. They are, in fact, the architectural expressions that give Milwaukee its unique old world character. These styles were very popular with the city's large population of German-American and Polish-American merchants because they allowed them to express their ethnicity while reflecting the contemporary architectural trends in



■ The Wargin Building, 1530-34 W. Lincoln Avenue (1914).



■ The Robert Perske Building, 1629-31 W. Becher Street (1909).

their central European homelands. Even though they were revivals of a type of architecture that had been popular in the sixteenth and seventeenth centuries, the Flemish and German Renaissance Revival styles

HISTORIC COMMERCIAL ARCHITECTURAL STYLES

were not considered to be old-fashioned at the turn-of-the-century. To the contrary, at the time, they were considered to be very up-to-date.

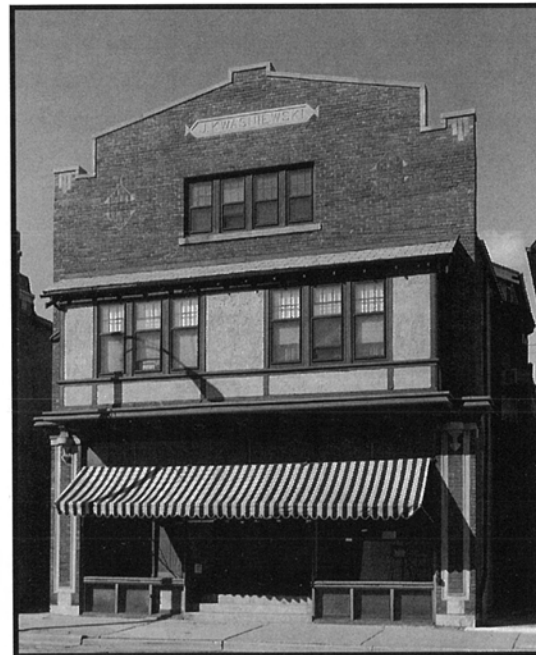
The Flemish and German Renaissance Revival styles are easily identified by the tall gables on the fronts of the buildings. Often these gables are shaped with elaborately curved or stepped profiles and accented with bold copings and ornamental brickwork. It was very typical for the second story over the storefront to feature a projecting oriel window as its principal architectural feature.

EARLY TWENTIETH CENTURY COMMERCIAL STYLE (1900-1930)

The Commercial Style developed in the early 1900s as a reaction to the fussy, ornate Victorian architectural styles of the late nineteenth century. It was a very popular style because of its adaptability to a variety of building types, especially to the new 1-story, flat-roofed commercial building, which appeared on the urban scene in Milwaukee in the early 1900s and immediately became very common. The character of Early Twentieth Century Commercial Style structures is determined by the use of patterned masonry wall surfaces, shaped parapets at the roofline that were often uninterrupted by a projecting cornice, and large rectangular windows arranged in groups. The "Chicago window," a 3-part window with a wide, fixed central light flanked by two narrower double-hung sashes, is a common feature. This style was popular for commercial buildings through the 1920s. Examples can usually be identified by their rather



■ 4413 N. Oakland Avenue.



■ Kwasniewski Building, 1024 W. Lincoln Avenue (1916).

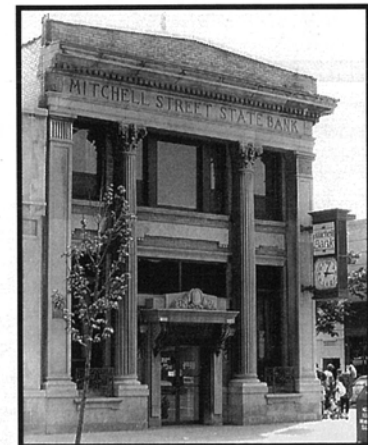
plain, flat appearance which is relieved by the use of panels of brick laid in patterns and sparingly used inset accents of tile, concrete, limestone or terra cotta.

NEOCLASSICAL REVIVAL STYLE (1895-1935)

The Neoclassical Revival style was inspired by the architecture of ancient Greek and Roman temples. It is a bold, monumental style of architecture that relies for effect largely upon the use of classical design elements such as columns, pilasters, pediments, and cornices. Neoclassical style buildings are usually



■ The Dorsey Building, 1428 N. Farwell Avenue (1913).

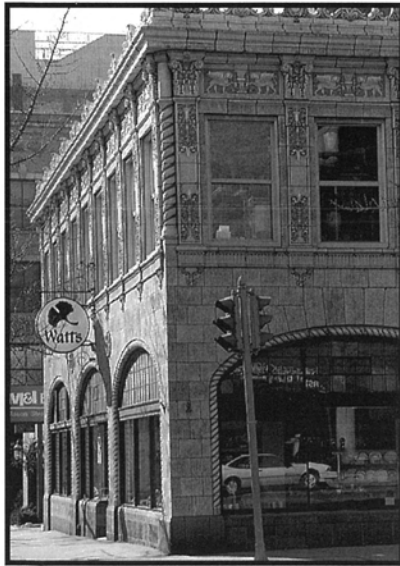


■ Mitchell Street State Bank Building, 1039-41 W. Mitchell Street (1916).

constructed of masonry with smooth limestone being the preferred material, although terra cotta and brick were also widely used. This style was most commonly used for banks, although some retail buildings were given Neoclassical style facades as well.

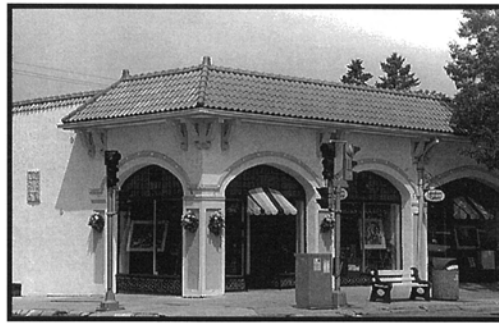
MEDITERRANEAN REVIVAL STYLE (1915-1935)

The Mediterranean Revival style reflected the interest in the romantic, exotic architecture of the sunny lands that bordered the Mediterranean Sea, especially Italy, Spain and North Africa. It is characterized by the use of tan tapestry brick, terra cotta, or stucco cladding, arched windows, Spanish tile roofs,



■ The George Watts Building, 759-61 N. Jefferson Street (1925).

and terra cotta or cast stone accents in the form of twisted columns, rope moldings or Baroque style ornaments. There are many examples of Mediterranean Revival style commercial buildings in Milwaukee, particularly in the neighborhoods developed in the 'teens and 'twenties.



■ 4401-09 N. Oakland Avenue.

ART DECO/ART MODERNE (1925-1950)

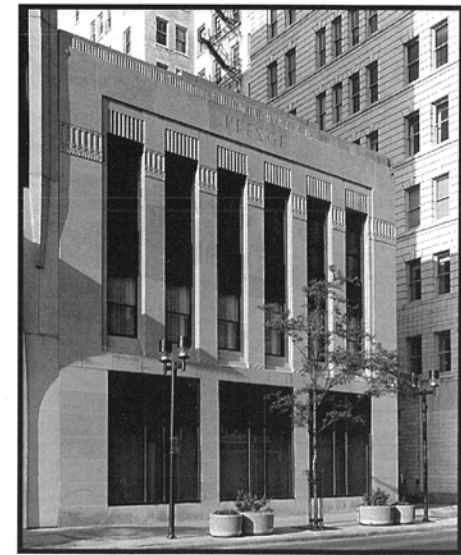
The period between the First and Second World Wars was a time of social, technological, and economic change in America. Architecturally a great deal of experimentation occurred with new materials and technologies and the aesthetics of the European "Modern Movement." This trend toward modernism in the 1920s and 1930s is illustrated by a relatively small number of Art Deco and Art Moderne-style buildings in Milwaukee. The fascination with smooth surfaces, shiny building materials, dramatic linear motifs and shallow, abstract decorative designs is typical of both styles.

Art Deco was the radical new modern style of the late 1920s and 1930s. An attempt to marry the early

modern architecture of Europe with the latest trends in the fine arts, the Art Deco style came to the United States from Europe. In this country it developed



■ The Art Moderne style Grants Building, 2235 N. Dr. Martin Luther King Jr. Drive (1931).



■ The Art Deco style Kresge Company Building, 215 W. Wisconsin Avenue (1930).

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predominantly as a commercial style of architecture most often used on buildings such as hotels, apartment houses, stores, and high-rise office buildings. A number of older buildings also had their storefronts remodeled in the Art Deco style. Art Deco is characterized by smooth wall planes often articulated with vertically banded windows, fin-like piers that extend through the parapets, and the concentration of flat, rectilinear or highly stylized ornament in the spandrel panels, around the entrance and at the roofline. These buildings often have flat roofs and are usually cubically massed with setbacks at the upper stories if they are very tall. Typical ornamental features include smooth, polished marble in rich colors, patterned terra cotta or carved limestone panels, and intricate metal grilles. Zig-zag lines, chevron patterns, stylized foliage, and stepped arches were other characteristic design motifs.

The more curvaceous Art Moderne style succeeded the angular Art Deco in popularity in the 1930s and remained popular through the 1940s. Essentially the Art Moderne represented a simplification of the Art Deco style in that it largely abandoned the use of the costly hand-crafted, delicate decorative panels and sculptural ornament of the Art Deco in favor of a bolder, more industrial, machine-derived aesthetic utilizing obviously manufactured materials overlaid with abstracted elements for decorative effect. Often stylized lettering or signage was incorporated into the architecture. It was the slick modern architecture of its era and is frequently called streamlined modern today because of the visual associations between the curves, port hole windows, fins, and horizontal chrome or aluminum speed line motif moldings of

Art Moderne buildings and the aerodynamically designed ocean liners, locomotives and automobiles of the era. Because there was relatively little new construction during the Great Depression and the war years of the early 1940s, the Art Moderne style was often used to reface older commercial storefronts to give them an up-to-date look.

THE POST-WAR MODERN STYLE

After World War II, a more pervasive interest in stark simplicity and industrial technology banished even the sparse decoration of the Art Moderne. Commercial structures were often reduced to little more than plain plate glass and aluminum storefronts surmounted by enameled panel billboard facades enlivened only by the typically large lighted signage of the period. During the prosperous postwar era, it became the fashion to completely cover over older facades with flat panels so that the original character of the building was totally obscured. This was made possible by the vacation of the upper stories as the tenants of the apartments that had traditionally been located above stores moved elsewhere, a trend

encouraged by the zoning ordinances of the period which discouraged mixing housing with commercial uses. The vacated space was either used for storage or, more typically, simply left empty so that it didn't matter if the windows were covered over. Often, beneath this modern skin, the original building facade was left intact except for projecting elements, such as the cornice, which usually had to be removed. There are many of these 1950s modernized buildings throughout the older parts of the city whose original character remains hidden beneath false cladding. In newly developing areas, plain, featureless, one-story, flat-roofed commercial buildings became the norm, distinguished only by their large glassy storefronts, which were sometimes sheltered by cantilevered canopies with chrome fascias, and their flashy, lighted signs. ■



■ 4300-4310 W. Forest Home Avenue (1949).



■ Tower Chicken Farm Building, 4111 S. Sixth Street (1954).

PLANNING A STOREFRONT REHABILITATION



PLANNING A STOREFRONT REHABILITATION

ANALYZING YOUR STOREFRONT REHABILITATION NEEDS

The following section was adapted from the North Third Street Area Historic Preservation Study prepared by Resource Design Group, Inc. of Ann Arbor, Michigan for the City of Milwaukee in 1983. The drawings were prepared by the Department of City Development. It is an excellent general guide to analyzing the facade of an older commercial building to determine what its visual strengths and weaknesses are and what should be done to make the structure more visually appealing and function better for its tenants. If you have never really studied the front of your building — and, truthfully, most of us probably haven't — this short exercise will help you to see your building in a new light and aid you in planning how to spend your rehabilitation dollars to achieve the most impact.

FACADE EVALUATION

To evaluate your building's facade, answer the adjacent questions. Stand across the street from the building or use a clear photograph of the facade and determine from the diagram below the existing condition of the various parts of your building. On the next page is a drawing of a building representative of many which can be found in Milwaukee. Obviously, since there are many different architectural styles, some interpretation will be necessary on your part to relate these details to your building.

■ Preceding page: The front of 611 W. National Avenue in the midst of rehabilitation in 1993.

After you take a close look at your building, then read the following section, "A Guide to Analyzing Your Storefront," to focus on the particular design issues you need to be concerned with. Following that brief overview, read the appropriate detailed chapter to get the information you need to proceed with planning your rehab in an informed manner.

The Questions	If no refer to:
1. Do the storefront and upper facade create a single image, instead of looking like two distinct parts?	Pages A, E, G
2. Is the upper facade completely visible?	Pages A, F
3. Is the original wood or masonry wall in good condition?	Page E
4. Does the upper facade have a visual top (i.e., cornice or decorative brickwork)?	Page D
5. Are the upper facade windows in good condition?	Page C
6. Have the upper facade windows been maintained in their original shape?	Page C
7. Does the signage complement storefront without obscuring building details?	Pages A, D, E
8. Does the storefront fill the original storefront opening without covering the edges?	Pages A, D, F

9. Are the masonry piers at the sides of the storefront visible and do they match the upper facade?

Pages E, F

10. Are the storefront windows and doors in their original size and configuration?

Pages A, B

11. Is the storefront entry slightly recessed?

Pages A, B

12. Do the storefront materials complement the upper facade in texture, pattern and color?

Pages A, D, F and G

13. Do the colors on the storefront and upper facade look like they belong together?

Pages A, G

OVERVIEW

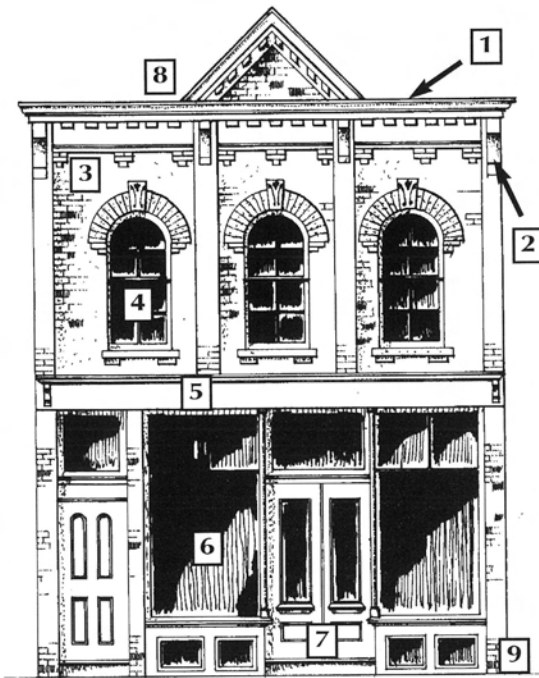
1. See the *Cornices* chapter for information on rehabbing or reconstructing a period style cornice in masonry, wood or metal.

2. The treatment of wooden brackets and other decorative millwork and siding is covered in the *Wooden Siding, Trim, Windows and Doors* chapter.

3. The chapter on *Masonry* contains guidelines for the proper rehabilitation of masonry walls and trim.

4. The care of older wooden windows is discussed in the chapter *Wooden Siding, Trim, Windows and Doors*.

5. Consult the chapter on *Signage* for a discussion and examples of signage that will maximize the advertising potential and complement the storefront.



6. The *Storefronts* chapter details the economic and aesthetic importance of a properly designed street level storefront made of wood or metal. The chapter on *Glass* will also be helpful.

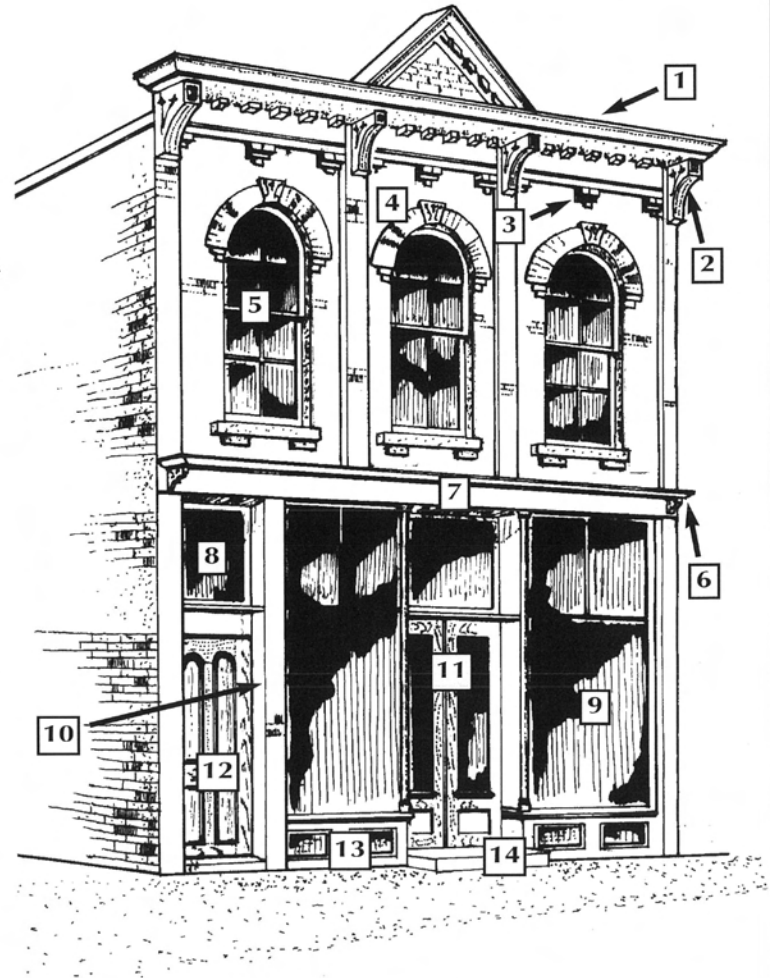
7. The *Wooden Siding, Trim, Windows and Doors* chapter contains information on doors that will enhance the character of an older storefront.

8. Consult the chapter on *Roofing* for an explanation of the standard coverings for flat and pitched roofs.

9. Foundation work is discussed in the chapter on *Masonry*.

TERMS USED TO DESCRIBE STOREFRONT FEATURES

1. UPPER CORNICE
2. BRACKET
3. CORBELLED BRICK DECORATION
4. WINDOW HOOD MOLDING
5. DOUBLE HUNG WINDOW UNIT
6. STOREFRONT CORNICE
7. SIGN ZONE
8. TRANSOM WINDOW
9. DISPLAY WINDOW
10. MASONRY PIER
11. DOUBLE LEAF ENTRY DOOR
12. DOOR TO UPPER FLOOR
13. BULKHEAD
14. ENTRY RECESS



A

STOREFRONT DESIGN

Because of its commercial use and proximity to the sidewalk, the storefront is by far the most “active” part of the building front. Changes in tenants, cultural patterns, commercial fashions, and technology often have caused repeated alterations to the storefront. Generation after generation, the storefront may be repeatedly

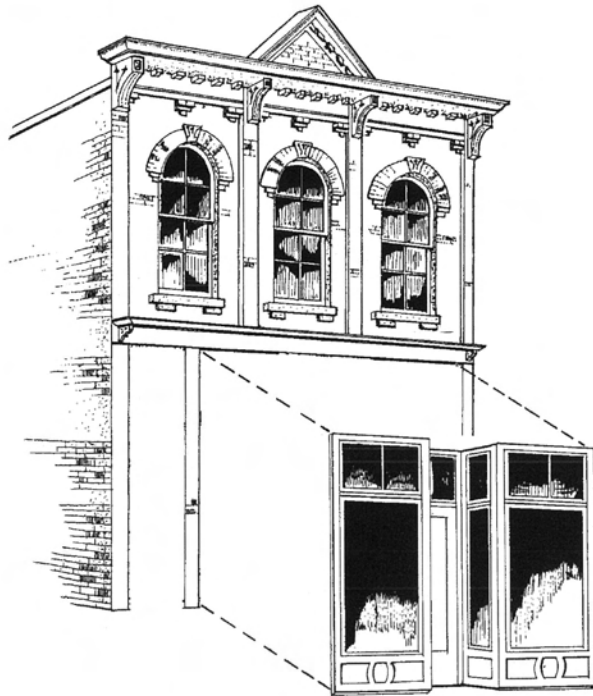
remodeled while the upper part of the building front stays much the same or deteriorates. Due to this frequency of change, the storefront presents an important and recurring design problem. If a rehabilitation is being planned, there are a number of design problems and potential options which should be recognized.

COMMON DESIGN PROBLEMS IN A REMODELED STOREFRONT

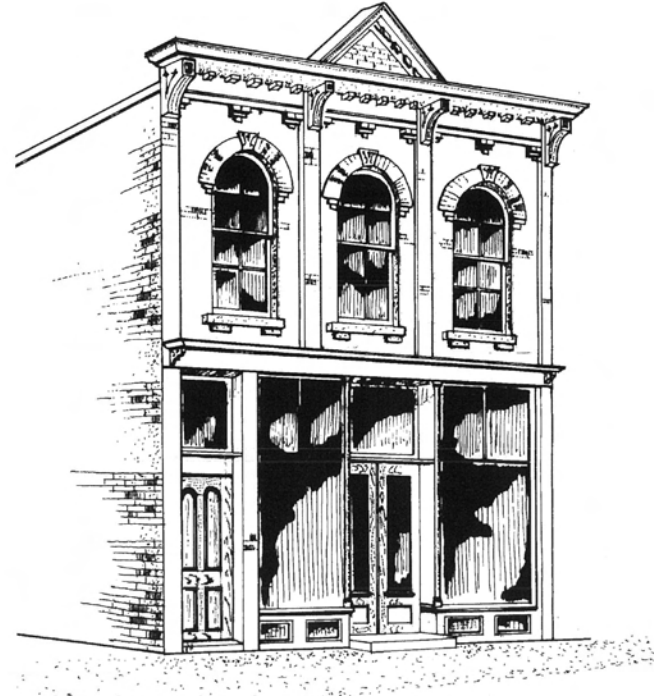
- The upper part of the facade appears forgotten - an awkward visual leftover. Good historic architecture is left to deteriorate.
- The storefront has expanded in area and encroached on the rest of the facade.
- The remodeled storefront looks “pasted-on” rather than being an integral part of the facade. As a result, the facade appears to be cut vertically into unrelated halves.
- Storefront signage is garish or too large, overwhelming the facade.
- Storefront materials do not relate well to the historic facade in terms of type, color and texture.
- Remodeling has reduced the storefront height and display window area.



A RE-ESTABLISHING CHARACTER BY RETURNING TO THE BASICS



■ The intact original historic decoration and framework of a remodeled storefront can be salvaged and become the basis for a new design. A new storefront, designed to look like an original part of the building, can be made of wood or metal, including modern aluminum if it is painted an appropriate color.

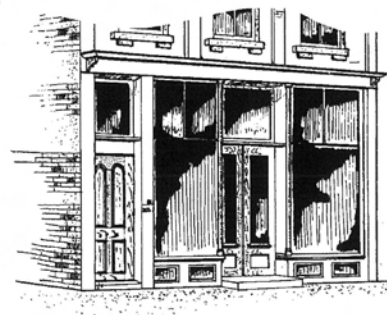


■ The reconstructed storefront not only unifies the architecture of the building but creates a more inviting, customer-friendly location for a business.

B DOORS

Traditionally the storefront door was more than just a door. Tall and stately in proportion, its design reflected its commercial importance. Its wood and glass construction made it substantial and inviting to the customer. Other storefront doors (usually leading to the upper floors) were similar in appearance but less impressive than the main entry door.

The storefront entry should play a similar role today. The customer should be invited into the store by a pleasant entry. Four general concepts should guide the design of doors.



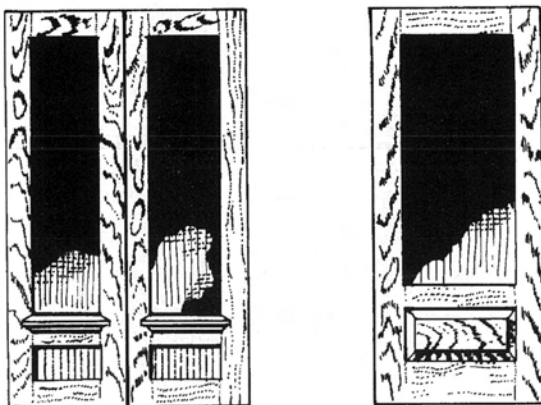
First, reuse the historic door if possible. If not, consider replacing it with a new door of the same design.

Second, if the original design is not known, use a simple wood and glass door of traditional design. If an aluminum and glass door is used, it should be very simple in design.

Third, make the door special with simple details such as a handsome brass door pull, brass kickplate or an attractive painted sign on the glass.

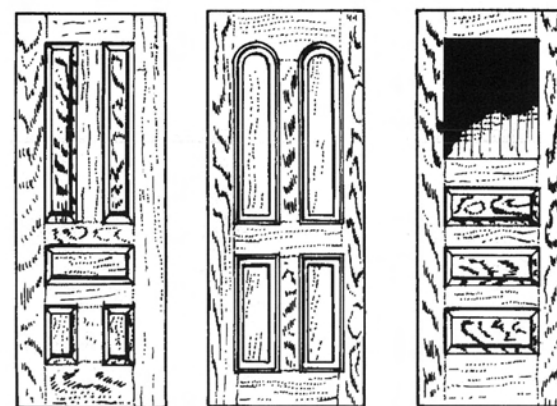
Fourth, avoid inappropriately decorated doors. Fake historic or highly decorated contemporary doors look out of place on a traditional storefront.

GLAZED STOREFRONT DOORS



■ Years ago, the typical storefront entry featured a wooden panel door with a large glass window. A symmetrical pair of entry doors was common on many of the city's commercial buildings constructed before about 1910.

UPPER FLAT DOORS

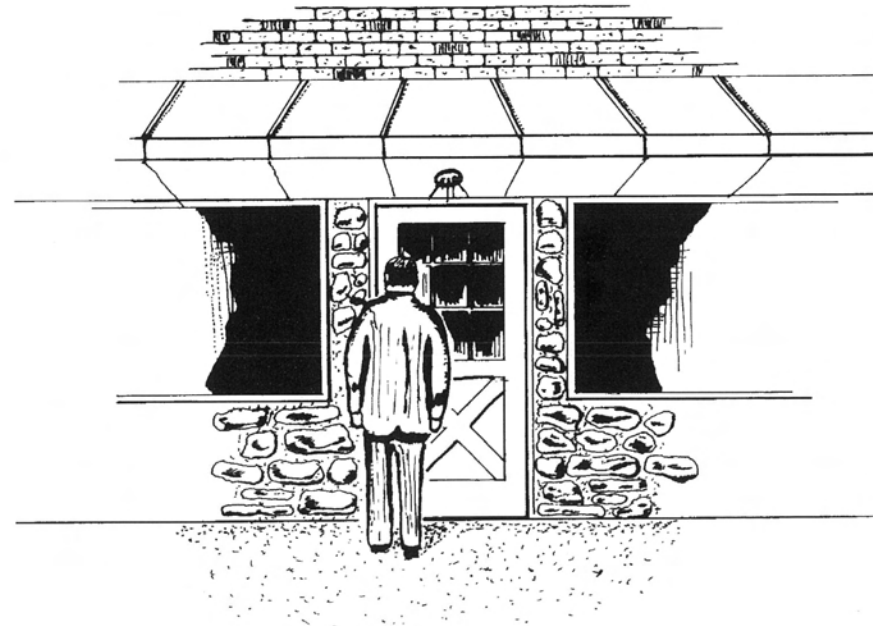


■ The door to the upper story was usually a simple paneled door with or without a window. During a rehabilitation, it is essential to select an entry door that is appropriate to the style of the building.

B THE ENTRY EXPERIENCE

The experience of entry is an important part of storefront design. Compare the examples shown. On left, the traditional entry emphasizes the door and display windows to draw one into the store. The recessed entry allows the door to open out without blocking the sidewalk. If it is not too high above the sidewalk,

the floor of the recessed entry area should be sloped to provide easier access for the physically challenged. In the remodeled design at the right, the entry recess was eliminated and replaced with a cluttered assembly of dissimilar modern materials that lack a unified character and diminish the entry experience.



C UPPER STORY WOODEN WINDOWS

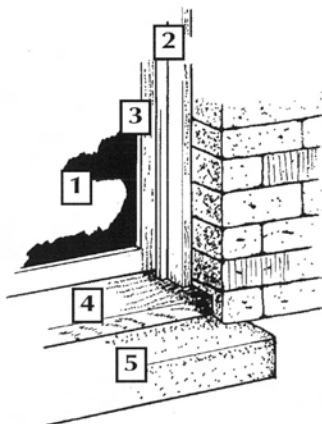
The traditional commercial facade has two types of windows: large display windows at the storefront level and smaller double hung windows at the upper floors. This page focuses on the upper facade windows. These units were virtually always constructed of wood.

If the window has deteriorated, always consider having new wood parts made to repair historic wood windows before resorting to replacement of the entire window unit. A local millwork shop can probably create new pieces to match the originals, and the cost may not be as high as one would think. If a window has deteriorated beyond repair, it should be replaced with a window matching the original as closely as possible in size and configuration of lights.

In all cases, any new windows should fit the original window opening. The window opening should never be blocked down to accept smaller stock-sized window units. If a material other than wood is used for the new window unit, its color, the size of the framing members, and its details should match the original as closely as possible. Storm windows should be installed on upper floor windows to conserve energy if the upper stories are heated. In some cases, interior storm windows may be more practical to install and maintain than exterior mounted storm windows, and you should carefully consider this option.

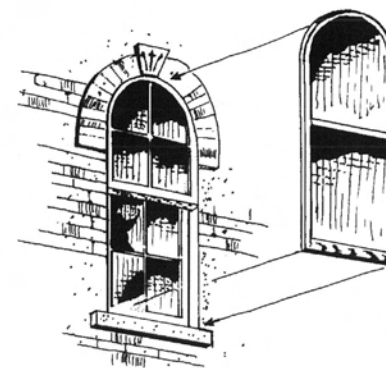
TYPICAL WINDOW PARTS

■ A double hung window is composed of two movable windows, each called a "sash," that glide up and down past each other in channels that are part of the wooden frame. The sill is the bottom-most part of the frame. It is sloped to direct water away from the window. Deteriorated wooden windows can often be rehabilitated with modern epoxies or have new wooden pieces inserted in place of rotted ones.



1. GLASS
2. FRAME
3. SASH
4. WOOD SILL
5. STONE SILL

■ A storm window, which will increase the energy efficiency of a double hung window, should always conform to the size and shape of the window opening. Arched top windows, for example, should not be blocked-down with plywood to fit stock rectangular storm windows.

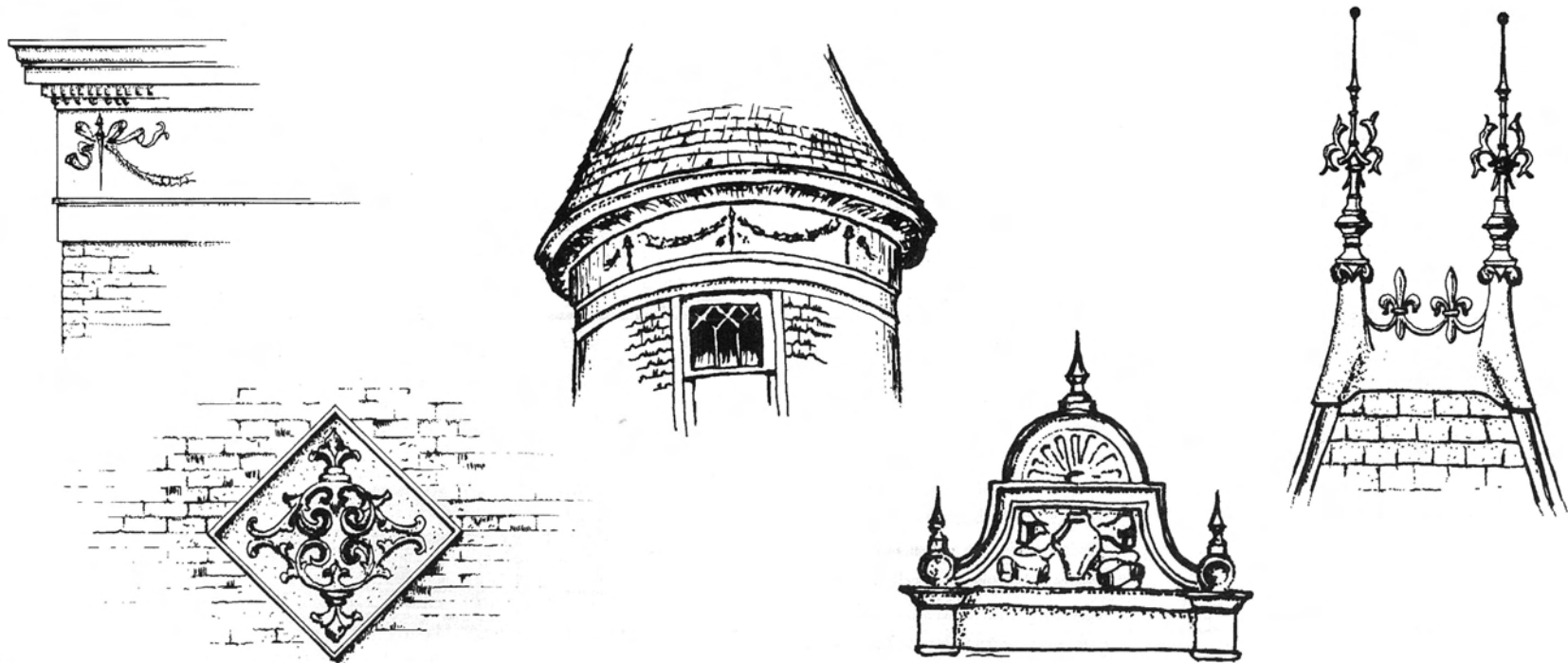


D TRADITIONAL DECORATION

Decoration was often used to enliven traditional commercial facades. It was sometimes simple, sometimes complex. It always emphasized the basic character of the facade. Its style reflected the fashions and technology of the period when it was built.

Any existing historic decoration should be preserved. It reinforces the traditional character of the building and adds a richness of detail which is often irreplaceable at today's costs. At the same time, the decoration lends a unique character to individual buildings and to the neighborhood as a whole.

Many times in the remodeling of storefronts, original decorative details were left intact as visual "left-overs" or simply covered up with new construction. When you are planning improvements, these forgotten details should not be wasted. If enough of them remain, they can be restored as part of a return to the original design. If only a few remain, they can be incorporated as design features in a new storefront. In either case, the design of any improvements should be developed to reflect the character of the remaining details and create a harmonious background which emphasizes them.



E

HISTORIC MATERIALS

Four types of materials were traditionally used to construct commercial facades. They were masonry, metal (cast iron and sheet metal), wood, and glass. Each of these contributes a special character to the facade. If they are properly maintained, they can provide years of satisfactory performance. Before original materials are replaced, their condition should be carefully evaluated by a specialist to determine if they can be repaired.

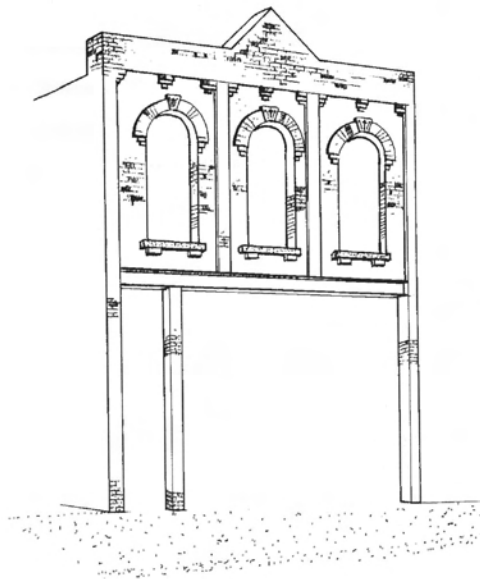
Masonry – brick or stone – causes relatively few maintenance problems. Deterioration of masonry units usually results from excessive water penetration. A common problem in masonry walls is deterioration of the

mortar joints. Wood and metal are more subject to damage from natural forces and neglect. Deterioration of anchoring and support systems, as well as of the surface material often causes maintenance problems. Good maintenance today will prevent additional deterioration and the eventual loss of valuable detail.

Traditional facade materials can be divided into two groups:

- the structural wood or masonry of which the facade wall is built
- the wood, glass, and metal which frame and enclose openings and are used to decorate the facade.

MASONRY



■ The wall of a commercial building is often made of brick and trimmed with stone or terra cotta accents. Patterned or corbelled brickwork is also used as embellishment. Masonry surfaces should generally be left with a natural finish. Do not paint brick unless it is already painted. If the masonry needs cleaning to remove dirt or paint, it should be chemically cleaned and never sandblasted. The wood front of a commercial building should be repaired and kept well painted. The installation of vinyl and aluminum siding can present a variety of difficulties and should generally be avoided if retaining historic character is one of your goals (see *Wooden Siding and Trim* chapter).

WOOD, METAL & GLASS



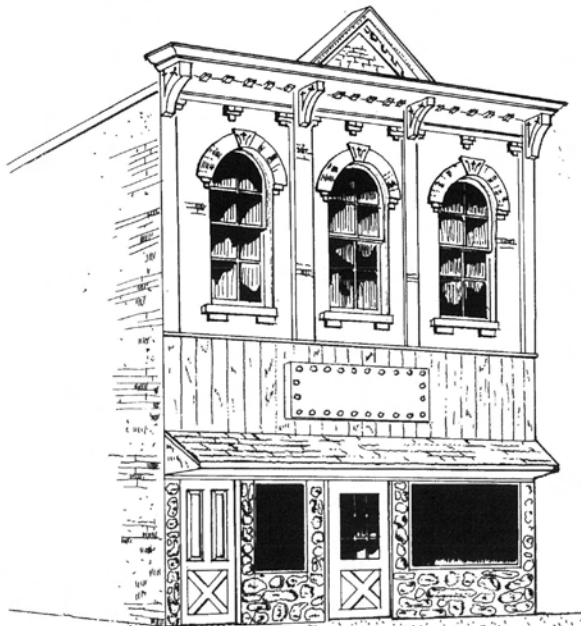
■ Wood, metal and glass are used in a variety of ways to complete and embellish the storefront wall. Trim pieces, brackets, cornices and doors are found in many different materials and configurations. Since deterioration affects not only decorative trim but also the structural materials that keep the building standing, regular maintenance and repair are vital to prevent costly replacement expenses later.

F MODERN MATERIALS

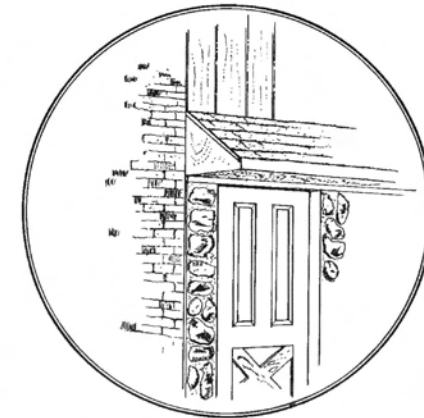
Contemporary materials which have visual characteristics similar to traditional materials can be appropriately used in facade rehabilitation. In general, they should have a smooth texture with a satin or flat finish and should be paintable or have a color which enhances the traditional character of the facade. Their profile should be similar to the profile of the traditional material they are replacing.

Some contemporary materials are often used to apply “shopping mall” style facades over the rich character of older buildings. Materials such as cedar shakes, textured plywood, stone veneer, marble tiles, stucco, metal or vinyl siding, and plastic are generally

not appropriate for use on traditional facades for three reasons. First, these materials often attempt to create a fake historic theme which conflicts with the traditional character of the building and neighborhood. Instead, only materials which reinforce the building’s authentic traditional character should be used. Second, these materials are often not of a character — in terms of durability, finish and appearance — that establishes the desired image of quality and stability. Third, these materials often detract from the unified character of the storefront and the facade. They can create a confused and cluttered appearance instead of reinforcing the traditional character of the facade.



■ Modern construction details can look clumsy and out of place on older storefronts and should be avoided. Retaining original materials and traditional design will unify the appearance of the storefront. Unnecessary, fake historic detail detracts from the quality and visual dominance of existing authentic detail. Poorly constructed components create a temporary, low quality image. Using several different materials on the storefront creates a cluttered appearance.



■ Particular attention should be paid to the point at which different materials join together. These “edges” should be clean & organized, keeping all new construction within the original facade openings minimizes visual problems. The detail above illustrates how the dissimilar modern materials have obscured the original lines of the facade creating a “pasted-on” appearance.

G PAINTING

Painting can be one of the simplest and most dramatic improvements one can make to a facade. It gives the facade a well-maintained appearance and is essential to ensuring a long life for many traditional materials. The steps below should be followed to ensure a quality job.

1. Catalog all the facade materials to be painted. Since brick, wood and metal have different properties, they may require different paints or procedures. Consult a local expert for advice. Use only quality paint products.
2. Make any necessary repairs to surfaces before starting: replace rotten wood, repoint masonry mortar joints, remove rust from metal, etc.
3. Carefully prepare each surface in accordance with the manufacturer's instructions for the paint being used. This will include scraping, sanding, and a thorough cleaning. Good surface preparation is an essential step to ensure a good looking, long lasting finish.
4. Apply the paint in accordance with the instructions. Paint only in satisfactory weather, and plan to use a primer as a first coat for better surface adhesion. Follow with two coats of the final color.

COLOR

Colors should visually relate building elements to each other. Because the amount of sun can change the appearance of a paint color, paint chips should be checked on both sunny and cloudy days. Painting a small section of the building in the chosen colors is the best way to check the effect of the colors on the building.

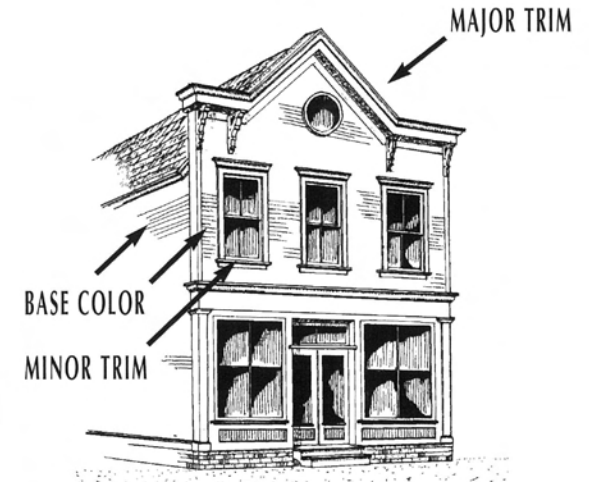
In the end, color choice is a personal decision. It is an expression of the building owner's taste, and of the image of the business located in the building. If some basic color and paint guidelines are kept in mind, however, color can add to the visual richness and appeal of older commercial buildings.

The color of the upper wall surface and the storefront piers is the base color. In most cases, if these elements are masonry and are not currently painted, they should not be painted. Paint can usually be removed from painted masonry to reestablish the natural brick color. Paint should never be removed from old masonry by sandblasting or abrasive cleaning. Chemical cleaning is just as effective and does not destroy the weathering surface of the masonry or erode the mortar joints.

If the masonry or wood wall is to be painted, the choice of base color is of primary importance. Generally, light base colors will visually project and emphasize the wall area. Darker colors will visually recede and emphasize the trim.

A typical 3-color design includes:

1. A base color for the siding (for unpainted masonry walls, the natural brick or stone is the base color).



■ Paint protects wood and metal and highlights architectural details. For most older buildings, at least three colors, but never more than five, should be used on the front of a building.

2. A major trim color for prominent details such as cornices, window enframements, and corner boards.
3. A minor trim color used sparingly for window sash and other small decorative accents.

Keep these points in mind:

- If the building was built before 1900, the window sash, the movable parts of the window unit, were usually painted the darkest color used on the building.
- Too many colors can create a confused, clumsy appearance.
- Apply paint to a "test area" and evaluate the effect before making any final decisions.
- Use the accent or minor trim color sparingly. ■

STOREFRONTS



An older storefront that is properly preserved, or is rehabilitated in a manner in keeping with its original appearance, can prove to be an excellent, business-boosting investment. Authentically designed historic storefronts are often a hallmark of fashionable specialty retail, entertainment, restaurant, and office buildings even in newer developments such as shopping malls. If you have an old building, it often makes good sense to restore the front to its original appearance to create a classy image for your business.

Following historic preservation guidelines when rehabilitating an old storefront can result in good design that can actually increase the value of a commercial building. Nor does the cost of a preservation-oriented storefront rehabilitation have to be exorbitant. On the contrary, often this approach will result in the expenditure of less money for storefront renovation than installing an inappropriate modern style storefront because the retention of quality historic materials and the use of the latest in money-saving restoration technologies can be less expensive than buying all new materials. Employing traditional storefront design for the fronts of new, infill buildings located within older neighborhoods will usually result in a handsomer, more compatible building as well.

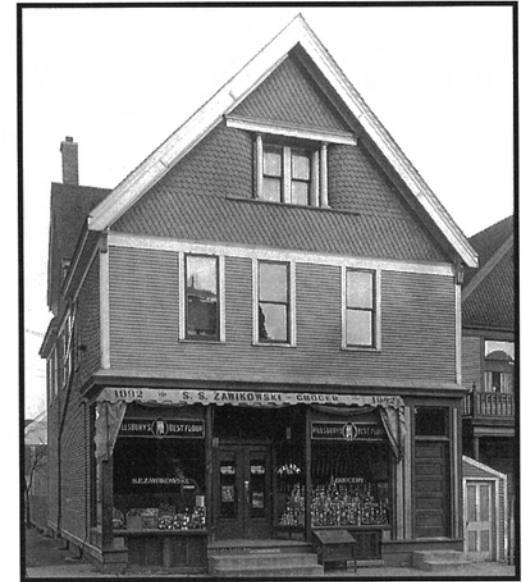
The owner of an older commercial building is often confronted with difficult decisions on how to go about preserving an historic storefront or how to select a design for an appropriate style new storefront to replace an insensitively remodeled older

■ **Preceding page:** The handsome bronze storefront at 315 E. Wisconsin Avenue as it looked in the 1920s. (Photo: Collection of Paul Jakubovich).

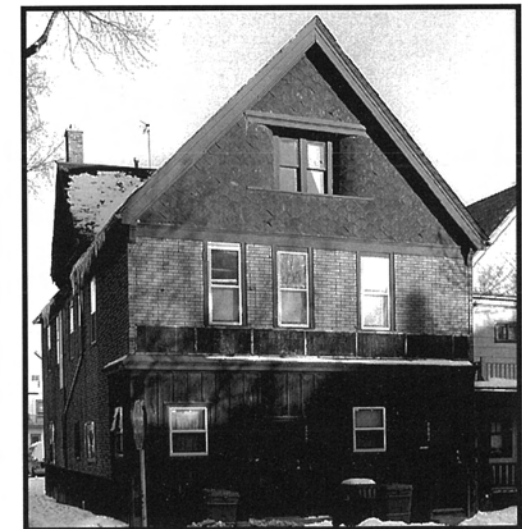
one. These decisions should be made with the thought in mind that historic building materials should be preserved in place whenever possible and that new design work should always reflect a type of architecture that is appropriate for the age and style of the building.

Rebuilding or preserving an older storefront can benefit a business in several ways. First, an attractive historic storefront contributes to a “pedestrian friendly” environment that can draw the attention of window shoppers and boost economic activity. Compared with the very predictable and uninspiring designs of most modern strip-mall storefronts, the distinctive architecture of a traditionally designed storefront can help to make a business stand out from competitors. Years ago, merchants considered a shop front and its show window “an auxiliary store, selling without salesmen, because it attracts patrons, arouses their interest, sells what is exhibited and, by beckoning people inside, leads to further sales.”¹ To a great extent, this is still true today, and it points up the importance of a well designed storefront to the marketing of goods and services.

A properly designed and maintained traditional-style storefront can enhance the image of a business and reinforce the sense of quality, service and dependability often associated with the businesses of years past. In terms of more immediate financial incentives, renovating the exterior of a historically-designated commercial building according to local and national preservation standards may qualify the owner for special State and Federal income tax credits or possibly even local matching grants.



■ **BEFORE:** This handsome storefront was appealing and inviting to customers.



■ **AFTER:** The building has lost much of its character and visual appeal as a result of an insensitive remodeling.

A street-level storefront is not only the architectural focal point of a small commercial building, it is also, unfortunately, the exterior feature most likely to have been altered from its original appearance. To accommodate changes in ownership, use, and architectural tastes, many storefronts were periodically modernized or “updated” while the remainder of the exterior was often left basically unaltered. A remodeled storefront that was carefully designed undertaken might be worthwhile to preserve, even if it does not match the overall style of the building. It is possible, for example, that an Art Deco style storefront of the 1920s or 1930s that was added to an 1880s commercial building might now be architecturally significant in its own right and should be retained and rehabilitated rather than replaced with a new period storefront of 1880s design.



■ This Victorian commercial building at 2678 N. Holton Street was updated with a new storefront in the 1930s that is now worth preserving in its own right as a fine example of Art Moderne design.

Many remodelings, however, particularly those done since World War II, have actually detracted from the inherent value and curbside appeal of older commercial buildings. Today, the tide of architectural tastes has turned once again and now historically styled storefronts are widely admired and sought after architectural features.

ENERGY CONSIDERATIONS

Many fine, older storefronts have been insensitively altered or obliterated in misguided efforts to conserve energy. A radical alteration to an attractive, serviceable older storefront, such as removing original plate glass windows and blocking down the openings to accommodate smaller windows will take a

very large chunk out of your pocketbook and may never result in any real overall savings. Like automobiles, storefronts often need some periodic “fine tuning” in order to deliver optimum levels of energy efficiency. The easiest and least costly energy projects that result in no visible alterations to the building, such as caulking, should always be done before any major changes in the structure are contemplated.

Contrary to a common belief, a large plate glass storefront display window, by itself, is usually not the prime culprit in terms of heat loss in an older commercial building. In fact, the infiltration of outside air through small cracks and gaps that open in the normal process of aging and settling in a structure usually accounts for the single biggest factor in energy waste. Unless air infiltration problems are corrected first, other energy-related projects, such as replacing a furnace or installing replacement windows may have little impact on decreasing energy costs.

Simple, inexpensive jobs, such as caulking around window and door frames, installing good weatherstripping, and keeping all basement windows tightly closed and sealed, can result in measurable decreases in air infiltration which, in turn, will reduce energy costs. One of the incidental benefits of a general rehab of the exterior, such as repointing brick, replacing missing moldings, and re-puttying windows, is that it can also significantly increase the overall energy efficiency of the structure.

Boarding up a storefront in order to completely eliminate the display windows will have a two-fold effect that any cost-conscious business owner would find undesirable. First, experience has shown that it may take many years, if ever, to recover the cost of the alterations with the savings from lower heating and cooling bills. Furthermore, a boarded-up storefront can create the impression that the neighborhood is unsafe or a poor location for doing business which may reduce pedestrian traffic in the area and ultimately depress the resale value of the building.



■ Boarding up a storefront is not the best way to make it more energy efficient.

Before going to the extreme measure of covering the display windows to save energy, it would be acceptable to construct a partition wall a few feet in back of the window and, in effect, create a small, enclosed display case that could feature merchandise displays and hanging signage. It may also be desirable to construct a small vestibule on the interior side of the entrance door to help contain the heat loss that occurs when an exterior door is opened.

If you choose to partition-off your display window area, as was commonly done years ago, the partition walls can be made of either clear insulating glass or could be an insulated wood stud wall, or a combination of the two. Years ago some commercial buildings were actually fitted with glass and wood partition walls in back of the display windows in an effort to conserve energy. The use of clear glazing in approximately the top two-thirds of the display case wall will contribute

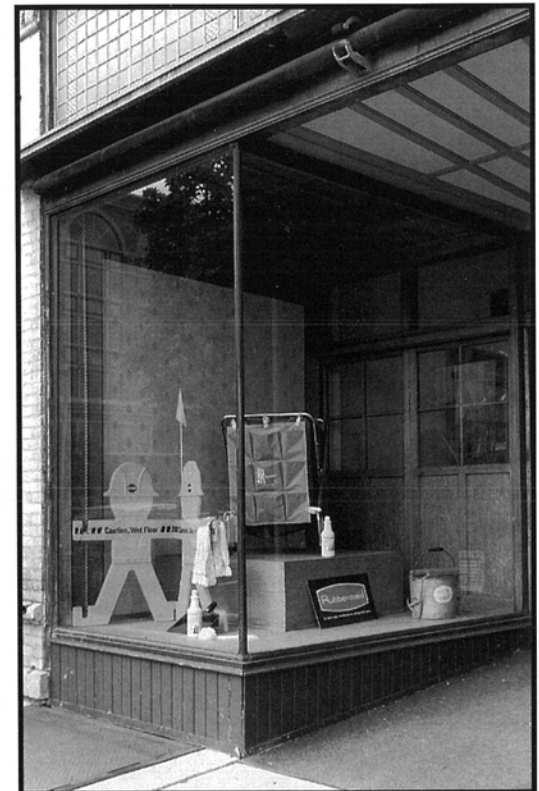
to a “pedestrian-friendly” appearance from the sidewalk and allow daylight to supplement the interior illumination. Such a partition should be constructed in a manner that will allow for its easy removal in the future and it should preserve any adjacent original interior architectural features, such as an ornamental tin ceiling.

A project aimed primarily at conserving energy should be evaluated in terms of its “payback” period, which is the period of time necessary to recoup the cost

of the project with energy savings. The payback period can be calculated by dividing the cost of the project by its estimated annual savings. For example, if an energy-related repair costs \$100 and results in an annual estimated energy savings of \$10 per year, the payback period would be 10 years (100 divided by \$10 per year equals 10 years). A project with an estimated payback period of more than five years is probably not worthwhile. This simple method of calculating payback fails to take into account the interest that could be earned if the money was invested rather than spent on an energy project. When interest is accounted for, as bankers and entrepreneurs often do with more complex formulas, the payback period, by comparison, will typically be even longer.

It is also important to understand that one of the fundamental concepts of energy design is that hot or warm air is attracted to cold air. This means that

during cold weather, heat is drawn from inside a building by colder, exterior walls, doors, and windows. Some building materials are better at slowing down, but not completely stopping, the passage of heat to the exterior. The measure of resistance that a building material has to heat flow is called an “R-value.” The larger an R-value is, the better that material will insulate against heat loss.



■ A display window can be partitioned into a little room by constructing a partition between it and the store interior. This will allow for more creative displays, add privacy to the store interior, and conserve energy.

Unless R-values are placed in their proper context, they can contribute to false impressions about the most prudent methods to boost the energy efficiency of an old storefront. Claims that a new insulating glass window (sometimes called a thermopane) is 100 percent more efficient than a sheet of old, single strength window glass may sound impressive and, technically, it is true, but it is also somewhat misleading. For example, a sheet of ordinary window glass without a storm window has a relatively low insulation value of about R-1. Insulating glass, composed of two sheets of glass with a sealed air space in between, is rated at about twice that amount, or R-2. However, even doubling the very small heat resistance value of common window glass still does not amount to very much insulation. Consequently, installing insulating glass may not result in dramatically lowered energy costs. The costly, tinted coatings that can be factory-applied to new insulating glass, such as "low-e," can, admittedly, boost the energy efficiency of the glass. However, they may not be a good choice because they invariably reduce the transparency and overall appearance of the storefront display windows.

ADAPTING A STOREFRONT TO NON-RETAIL USE

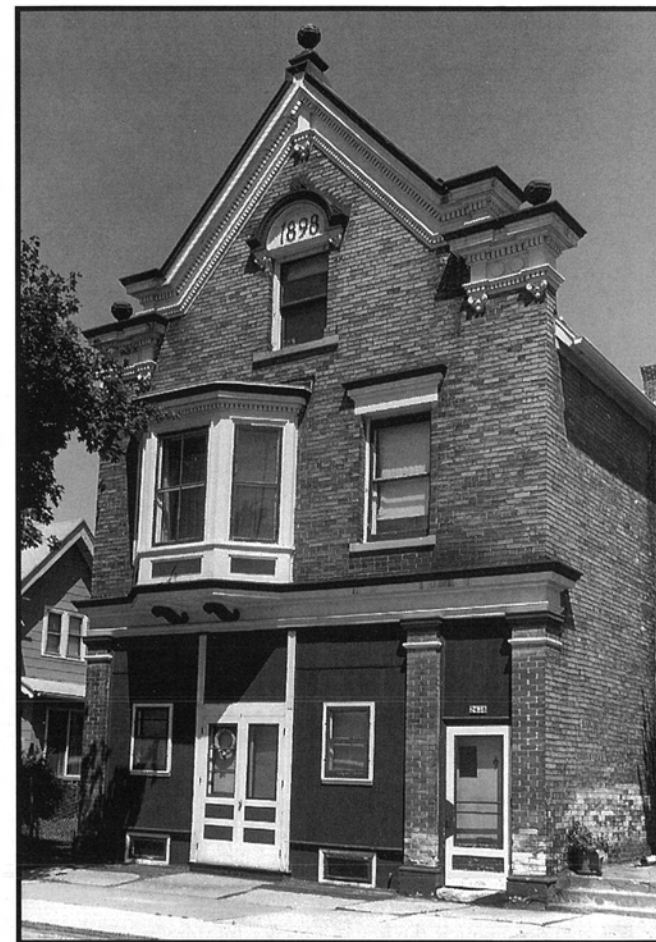
Sometimes a building that was previously used as a store is converted to some other use, such as an office, that does not require large plate glass display windows. When this occurs, it is often thought that the only alternative is to remove the display windows, board over the storefront, and install new smaller windows.

Actually there are a number of less drastic ways to adapt a storefront to new uses that cost much less money while preserving the structure's architectural integrity and making it easy to return it to retail use, if that should again become desirable.

One of the simplest and cheapest ways to add privacy to a storefront interior is with curtains, blinds or shutters. Historically, this was the solution most often used. Another option is to paint over the glass until you have only the clear glazed area you want. A variation on painting glass that is more permanent is to use combination plate glass, which is created by sandblasting the bottom portion of the window. Sandblasting glass makes it obscure, while still allowing light into the interior. This was a popular means to increase storefront privacy between about 1910 and 1930. Combination plate glass can be useful today in situations where the bulkhead is too low to suit the present privacy needs of the interior, such as when an old retail store is converted to a professional office. Rather than structurally altering the height of a historic bulkhead to

increase privacy, the bottom portion of an existing plate glass show window could be sandblasted at the job site. The sandblasted finish should always face the interior of the building in order to reduce dirt build-up.

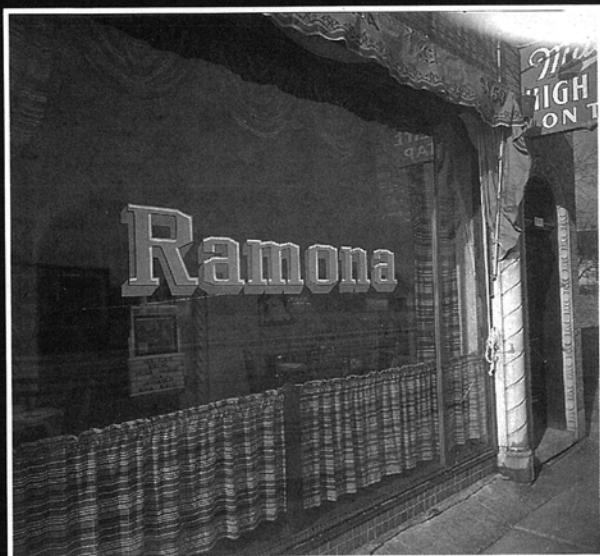
As has been said previously, yet another way of creating a private interior is to build a wall several



■ The visual appeal of this building has been severely compromised by boarding-up the storefront to accommodate a new, non-retail use.

feet behind the show windows with a door leading into the window space. This solution, of course, would require that the show window space be "decorated" in some way and kept clean. Often firms will simply suspend the name of the business or a large graphic behind the window.

THERE ARE A NUMBER OF EASY WAYS TO ADAPT A STOREFRONT TO NON-RETAIL USE



■ A cafe curtain is an inexpensive and effective way to increase privacy.



■ A full height curtain can be an attractive way to provide total privacy without altering a glass storefront.



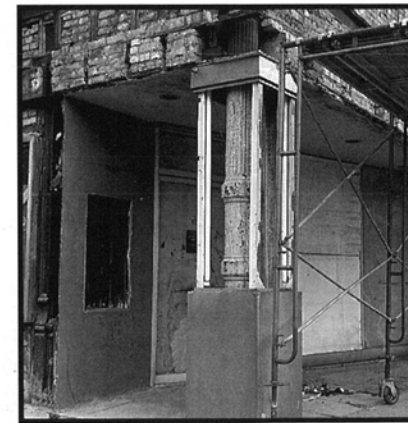
■ Venetian blinds are simple, cheap, and functional.

PLANNING A STOREFRONT RENOVATION PROJECT

Proper planning is the key to a successful storefront renovation or reconstruction. Designing a new, period style storefront or renovating an old one is a major undertaking that should be entrusted only to experienced professionals. The revitalization of any older storefront should ideally begin with a thorough assessment of the existing conditions in order to determine what materials may be original and whether any later alterations have acquired significance of their own and, therefore, should be preserved.



■ Ornamental transoms are often found intact when old signs or boards are removed from storefronts.



■ A long-hidden cast iron corner pier being uncovered during a storefront remodeling project.

Often many remnants of an original historic storefront survive hidden from view. It is not unusual for old storefront materials to be found buried beneath layers of later alterations. Perfectly-preserved leaded glass transom windows, for example, are sometimes found concealed by inappropriate, but easy-to-remove, metal panels or modern signage. Plaster, stucco and other modern finishing materials often hide original brick, stone or cast iron piers. Although historic storefront materials may have been damaged when a later storefront was installed over them, modern restoration techniques have made possible the cost-effective and visually-pleasing restoration of most building materials including stone, terra cotta and brick. (See Brick and Masonry chapter.)

Far too many older storefronts, or parts of them, have been needlessly removed when, in fact, modern restoration techniques could have made them like new again at less cost than replacement with modern, less appropriate, materials. Older storefronts are frequently built of high-quality, durable materials such as copper, bronze, stainless steel, cast iron and cypress wood that are worthwhile to retain both for economic and aesthetic reasons. Discarding a set of restorable, original wooden entry doors, for example, in favor of installing new, modern aluminum and glass doors could cost thousands of dollars extra

and compromise the appearance of the storefront. During the rehab of an older storefront, every effort should be made to identify and retain essential historic storefront elements such as cast iron posts, leaded glass, paneled doors, and ornamental features.

Once you have done a little digging and discovered what remnants of the original storefront have survived, you should give strong consideration to installing a storefront more in keeping with the original design by using the surviving fragments as clues to what was originally there.

Most period style storefronts generally contain at least three major horizontal divisions: bulkhead,

Within this basic composition, there are countless possible design variations that allow each storefront to have its own unique appearance.

THE COMPONENTS OF A TRADITIONAL STOREFRONT

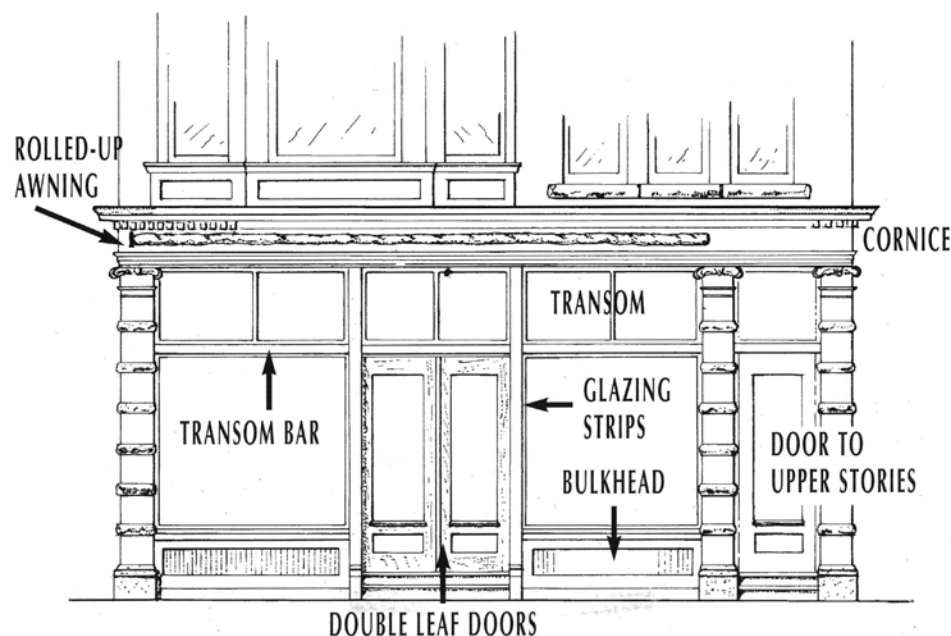
It is helpful to have a basic vocabulary of storefront construction terminology. A bulkhead, the lowermost part of a storefront, is the short panel or wall beneath a display window. Usually, a bulkhead is faced with wood, metal, brick or stone.

Sometimes it was fitted with small windows that

lighted the basement of the store. The height of a bulkhead, which is a significant factor in the overall appearance of a storefront, was often dependent on the type of merchandise the show window was originally built to display. As a rule of thumb, the bulkhead was tallest when the items displayed were very small. A storefront built for a jeweler, for example, featured a tall bulkhead because it displayed very small items that had to be close to eye level for the best possible viewing from the sidewalk. A clothing store, on the other hand, was generally fitted with a lower bulkhead because most of the merchandise was relatively large and was often displayed

on life-size mannequins.

A display window is located immediately above the bulkhead. It is composed of several components.



display window, and transom. Many storefronts, particularly those built before 1920, were also trimmed with a projecting cornice immediately above the transom.

The glass is held in place by small, vertical and horizontal pieces of wood or metal called glazing strips. Glazing strip systems made of non-corroding copper and bronze became very popular after about 1905, while before that time, wood and iron were more common. A muntin is a very thin horizontal or vertical dividing strip between two sheets of glass in a multipaned window.

A transom is a small window or series of glass panes above a door or display window. Some transom windows, particularly those above an entry door, were openable in order to provide ventilation. Transom windows were also an important source of daylight for a commercial interior and supplemented the natural light provided by the storefront glazing. Between the 1890s and 1930, transoms were often fitted with special molded glass prism blocks that were engineered to focus natural light deep into the interior of the building. The horizontal structural member that separates a transom window from the display window beneath it is called a transom bar or transom sill.

The word cornice has become a catch-all term for any horizontal, projecting molding or projecting box-like shelf that trims the top of a wall or that divides the storefront from the upper facade of a building. In the early twentieth century, cornices were often omitted in favor of parapets, some of which were decorated with pent roofs. A parapet is simply a wall that projects above the eaves line to hide the view of a roof. A pent roof, common to many early twentieth century commercial buildings, is a small, sloping decorative roof that projects from a parapet wall at the roofline. Brackets are the decorative pieces that appear to support a cornice or pent roof.



■ A cornice over a storefront.



■ A pent roof.



■ A parapet without a cornice.

STOREFRONT STYLES

The four major nineteenth century storefront styles that were popular in Milwaukee are the Italianate (1850 to early 1880s), the Victorian Gothic (1875 to about 1885), the Queen Anne (1885 to about 1905), and the Romanesque Revival (1885 to 1905). In the early twentieth century, the Flemish Renaissance Revival style (1895 to 1920), the Arts and Crafts style (1905 to 1920), the Tudor Revival (1915 to 1930), the Mediterranean Revival (1915 to 1930), and the Art Deco and Art Moderne styles (1925 to 1950) were all popular. One of the most prevalent types of commercial architecture of the first three decades of the twentieth century is a plain, functional mode, known as the Early Twentieth Century Commercial style, that featured shaped parapets and flat walls inset with patterned masonry.

Advances in the manufacture of window glass and architectural sheet metal were significant factors contributing to the evolution of storefront design. After the mid-nineteenth century, when storefronts were made primarily of wood with display windows composed of small panes of glass set in wooden frames, storefront design changed rapidly in response to the steady technological improvements in the manufacture of window glass and in the fabrication of the glazing systems used to hold the glass in place. Much of the change was precipitated by merchants who desired to display their goods in ever larger show windows with the fewest possible number of vision obstructing glazing bars. The trend was to larger and larger pieces of glass.

STAGES IN THE EVOLUTION OF STOREFRONT DESIGN IN MILWAUKEE

The earliest surviving commercial buildings in the city, built between the 1850s and 1875, were often fitted with wooden glazing systems holding relatively small panes of glass that generally never exceeded 30 by 20 inches and were often much smaller. Much of the ornamental work surrounding the windows, as well as the cornice above the storefront, was made of wood.

Seeking a more permanent material, manufacturers in the 1850s and 1860s experimented with cast and wrought iron storefronts. Often cast and wrought iron components were used in combination with wooden decorative and structural elements. Wooden storefronts partially clad with pressed ornamental sheet metal with large display windows set in place with iron glazing bars became popular during the 1880s and 1890s. During this same time period, the process for manufacturing large sheets of plate glass was perfected. This allowed for the construction of display windows with large areas of glass with relatively little obstructing framework.

Around 1905 a new type of storefront was developed, composed of exceptionally large sheets of plate glass set in thin, non-corroding metal glazing strips. This new system, simply called a metal storefront, became popular immediately and was the standard method of display window construction through the 1940s. This led to the development of the all glass storefront so common today.

Over the years, some building materials were more popular than others for storefront construction and, in fact, some materials are closely associated with

particular styles. Storefronts that were trimmed extensively with corbelled brick and dressed stone, for example, were popular during the 1870s and early 1880s for Italianate and Victorian Gothic style buildings. Many of the designs for stone and brick storefronts were also simulated in pressed sheet metal during that time. Storefronts clad entirely in ornamental pressed sheet metal were popular during the Queen Anne period from about 1885 to 1900. Sheet metal pressed ornament for storefronts remained popular, however, well into the early twentieth century.

STOREFRONT STRUCTURAL SYSTEMS

The design of any storefront depends to a great degree on its structural system. It is necessary to have a basic understanding of how a storefront is built in order to make plans for remodeling or rehabilitating it that are both safe and appropriate in design.

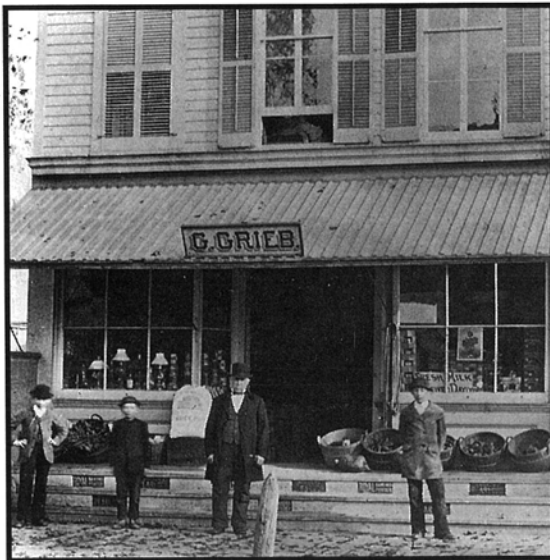
In order to accommodate large openings in the walls for display windows, most storefronts were built with post and lintel construction. This means that a wall opening is spanned at the top with a horizontal beam called a lintel that is in turn supported by sturdy vertical posts. If the building was narrow in width, the beam might only be supported by the side walls. When a storefront was wide or the weight of the building above the lintel was great, the lintel was supported along its length with intermediate posts or piers. These intermediate posts must never be removed without strengthening the beam or the building could collapse. The oldest and simplest storefronts were constructed with wooden posts and

lintels, even if the building was made of brick. By the 1850s, iron lintels supported on cast iron posts were common for the better class of store construction. Steel lintels and piers were introduced in the 1880s.

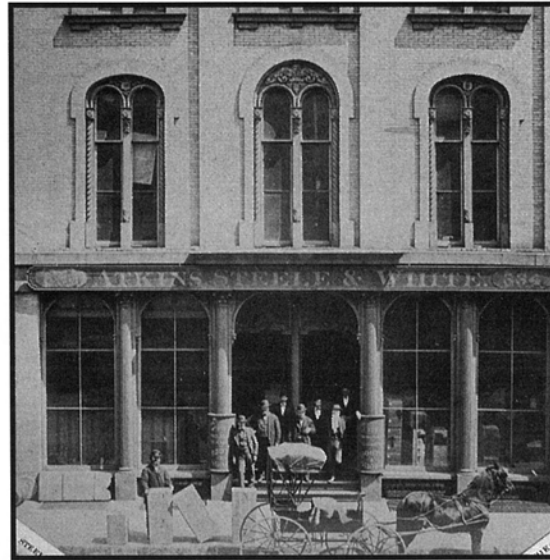
The wooden post and lintel method of construction was still popular as late as 1910 for small or inexpensive wood-frame commercial buildings. Hybrid structural systems using iron or steel posts with wooden lintels were also common through the early 1900s. By 1920, steel lintels and posts were used almost exclusively in commercial construction, particularly as a result of increasingly stringent fire codes in urban commercial areas. Too often, wooden posts and lintels in old storefronts are needlessly removed and replaced with steel during remodelings. Historic structural timbers are a high quality material that seldom need replacement, particularly since modern restoration techniques have made it possible to permanently and cost effectively repair damaged or decayed wood. (See Wood Restoration chapter.) When properly preserved and maintained, wooden lintels and other heavy wooden structural members can endure for centuries. In some ways, the wooden timber framing systems so common in the 1800s and early 1900s are better than steel in that they will not fail as quickly as steel if the building should experience a fire.

During the nineteenth century, particularly in the 1880s and 1890s, many masonry commercial storefronts were fitted with large iron lintels that were, in turn, supported by cast iron piers. Often this iron post and lintel system was given a decorative treatment and left exposed on the exterior as an important decorative feature of the building. One of the advantages to

THE EVOLUTION OF STOREFRONT DESIGN



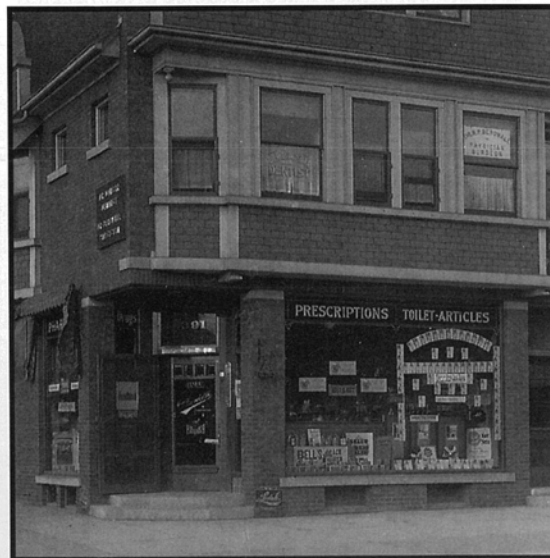
1.



2.



3.



4.



5.

1. A typical 1850-1870 period late Greek Revival style storefront with small paned windows and a board and batten awning. (Photo: Milwaukee Historic Preservation Commission)

2. A typical 1860-1880 period Italianate style building with a cast-iron storefront with arched windows. (Photo: Milwaukee County Historical Society)

3. A typical 1880-1910 period Queen Anne style building with a wood storefront with large plate glass windows and transoms. (Photo: Collection of Ray Johnson)

4. A generic early 1900s storefront with large plate glass windows from floor to ceiling. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)

5. A typical 1915-1930 period storefront with a thin metal glazing bar system and prism glass transoms.

this structural system was that the cast iron piers, which were less bulky than wooden ones, made it possible to install larger display windows and to give the entire storefront a much lighter and more transparent look. Many of the cast iron piers were molded in the form of reeded or fluted rectangular box columns, although the round columns common in the 1870s were still sometimes used. Today, cast iron piers and

columns are highly sought-after architectural salvage items that are used extensively for restoration projects. If properly maintained to prevent rust, a cast iron pier should last indefinitely. Because cast iron is inherently brittle and most cast iron piers are hollow or cellular in composition rather than being solid iron, a cast iron pier should never be subjected to heavy hammering because there is the risk that it could crack.

plain modern steel column that is carefully boxed with molded wood. Round, cast iron columns can be simulated in turned wood by a local millwork shop and made in two hollow pieces in order to fit around a new structural steel pipe column. There are many other substitutions that can be made for no longer available historic materials that will replicate an authentic period appearance.



■ A storefront with an exposed cast iron pier and lintel system.



■ A detail of an exposed cast iron lintel decorated with iron rosettes.

GENERAL GUIDELINES FOR STOREFRONT REHABILITATION

The general goal of any storefront rehabilitation project should be to end up with a storefront that fits the building. The surest way to achieve this goal would be to return to a design similar to the original storefront built with the building. Although today's dependence on modern mechanical systems and construction materials can, admittedly, make it a challenge to preserve or reconstruct an older style storefront, keep in mind that for every design problem there is a cost-effective solution that will not sacrifice important architectural details.

Although the replacement of original materials with identical materials is always preferable for the maintenance or reconstruction of an older storefront, some substitutions for original materials will often have to be made. For example, a missing cast iron pier can sometimes be replaced with a facsimile composed of a

TRANSOMS

A transom is an essential part of an older storefront, but it is often painted out or covered over in order to conceal a modern dropped interior ceiling behind it. When designing a store interior, strong consideration should be given to maintaining the original height of the ceiling for a variety of reasons other than the fact that a dropped ceiling defeats the purpose of a transom and can spoil its appearance from the exterior. For many years, ceilings were lowered



■ A transom is a traditional storefront component that can be both beautiful and functional.

under the false assumption that lower ceilings save energy. Another strong motivator was to be up-to-date and to reflect the low-ceilinged aesthetic of post-World War II modern architecture. Now, tall ceilings are again considered to be a fashionable and desirable feature for commercial interiors. Coincidentally, an older building can actually be safer in the event of a fire if it doesn't have a dropped ceiling that can conceal the spread of deadly flames.

In the event an interior ceiling behind a transom must be lowered to conceal new mechanical or electrical equipment, or for some other reason, there are two options for treating the transom area:

1. Preserve the transom by installing a dropped ceiling that is stepped or sloped upwards to form a well around the transom. The well should begin at least six feet back from the transom if possible.
2. Drop the ceiling to a level equal with the transom bar and backlight the transom glass. An appropriate type of obscure glass such as glue chip, figured, or prismatic glass (see Glass chapter) must glaze the transom in order to conceal the unfinished area behind it. The use of black plastic glazing in a transom that is covered over on the interior is not recommended because it has a non-historic appearance and will scratch easily.

GLAZING BAR SYSTEMS

Standard modern glazing strip systems made of anodized aluminum channels can approximate, but not actually duplicate, the appearance of many historic storefront glazing systems. Most modern

glazing strips are more boxy and bulky than the typical thin storefront glazing systems used on older storefronts. A few points to keep in mind when fitting an old storefront with a new glazing system are:

1. Select a glazing bar system that is as thin as possible.
2. Muntin strips in modern glazing strip systems should be avoided to the greatest extent possible because they are much too wide to convincingly convey a period effect.
3. The window glass should not be deeply recessed in the window frame.
4. Aluminum glazing bar systems should be painted dark green or black in color. Anodized bronze and natural aluminum finishes should be avoided.

Because recreating the appearance of an early twentieth century storefront can be difficult when using modern aluminum glazing bar systems, strong consideration should be given to rehabilitating a good quality old metal storefront glazing system if it is in good enough condition to rehabilitate. If they are found intact, early twentieth century glazing systems, especially those made with bronze or brass glazing strips, should be restored whenever possible. Weathered, painted glazing strips can usually be cleaned with modern restoration chemicals made for this purpose and then buffed and lacquered to produce a rich, golden finish that cannot be duplicated by today's modern anodized aluminum glazing strip systems. Some firms today make a specialty of restoring and maintaining metal storefront components. It is also possible that an architectural sheet metal shop could custom-fabricate

new replacement pieces for an old glazing strip system. Modern insulating glass made of two sheets of glass with an air space in between them can also sometimes be installed in the old glazing grids.

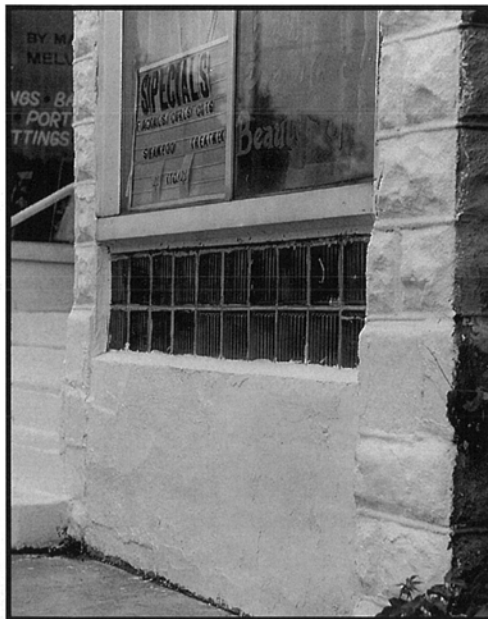


■ A Victorian cast iron glazing bar system like this one adds character to the storefront and should be preserved.

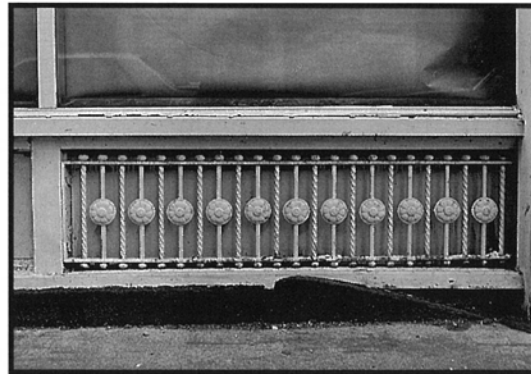
BASEMENT WINDOWS

Basement windows pose a special problem for owners of older commercial buildings. Today it has become almost a universally accepted practice to replace old wooden or steel basement windows with glass block inserts. In fact, the installation of glass block basement windows has become a small industry

all its own. The primary motivations for installing glass block in basement windows are usually security, energy efficiency, and low maintenance. The primary drawback to using glass block, at least on the fronts of older commercial buildings, is that it usually looks out of character with traditional architectural styles and calls attention to itself in a way that detracts from the aesthetic appeal of many commercial structures. Using glass block on the side or rear elevations of buildings, where it is not particularly visible, is probably not especially objectionable. On the fronts and side street elevations of corner buildings, it would definitely look better to retain the original windows or install new



■ Glass block basement window inserts look out of character on older commercial buildings, and their use should be avoided in very visible locations, especially on storefronts.



■ Decorative metal grates are a good way to protect the basement windows often found beneath the display windows on older storefronts.

ones, adding storm windows and bars if energy efficiency and security are important factors. Another easy and cheap way to bolster energy efficiency is to screw rigid foam insulation board to the interior side of the window, with the out-facing side painted black. Glass in basement windows can also be replaced with plywood painted glossy black if glass breakage is a concern. There are other easy, inexpensive, effective techniques, as well, that can be used to maintain the traditional appearance of storefront basement windows

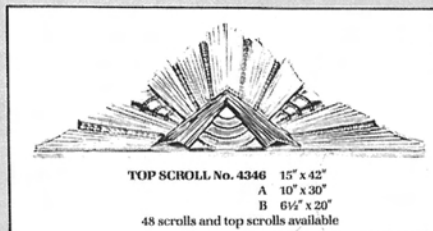
without resorting to the costly and often incongruous looking option of installing glass block.

SHEET METAL AND IRONWORK

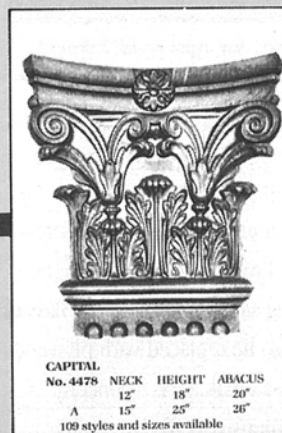
Pressed sheet metal ornament, which is still made today in historic styles, can often be an economical and durable way to replace a missing storefront cornice or deteriorated cast iron ornament. Pressed sheet metal capitals, finials, brackets, turned urns, and other ornaments can still be selected from catalogues just like the originals were many decades ago.

In addition, an exact replacement for a deteriorated or missing traditional, rolled sheet metal cornice can still be made today by an architectural sheet metal shop. If an old cornice is made of copper but is damaged, replacement pieces can usually be fashioned and soldered in place. Cornices made of galvanized sheet metal that are substantially intact should be preserved and repaired with new metal pieces that are fastened in place as inconspicuously as possible.

Existing sheet metal cornices that are slightly corroded or covered with peeling paint should never be sandblasted because that would damage the metal and lead to accelerated deterioration. Paint and rust can be safely removed by hand scraping and sanding or by the use of restoration chemicals specially designed for that purpose. Because old paint may contain lead, contractors should always carefully collect all loose paint chips and the chemical residue from any paint stripper that is used. Chemical derusting agents and strippers should be used on sheet metal with care, and a small test patch should always be made before



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W.F. Norman Corporation

■ These illustrations from a sheet metal company's catalogue show a sample of the wide variety of stamped sheet metal products still made today.

stripping a large area. Holes and damaged areas can be patched in the same manner as auto body work, using repair materials such as auto body filler.

A missing piece of cast iron ornament, such as a window cap or finial, can be made by using an original existing piece as a model from which to make a new iron copy. This process is not exceptionally costly if the piece to be copied is relatively small and in good condition.

Original cast iron and wrought iron architectural work is very durable. Genuine wrought iron, which some construction professionals can identify, is no longer made and is therefore particularly worthwhile to preserve. Wrought iron is known to be more rust resistant than modern steel. Over time, however, all iron, even wrought iron, can corrode, particularly if it has not been kept well painted. Merely painting over corroded iron will not protect the sound, underlying metal and corrosion can actually continue unseen beneath the paint. Corroded cast and wrought iron can be successfully sandblasted to remove surface corrosion and then immediately primed and repainted with a high quality metal paint. Sandblasting, however, should never be used to clean brick, stone, wood, glass or sheet metal because it will irreversibly damage these materials. Chemical de-rusting techniques are another acceptable way to clean iron, particularly if the piece can be removed. If it can't, surrounding building materials

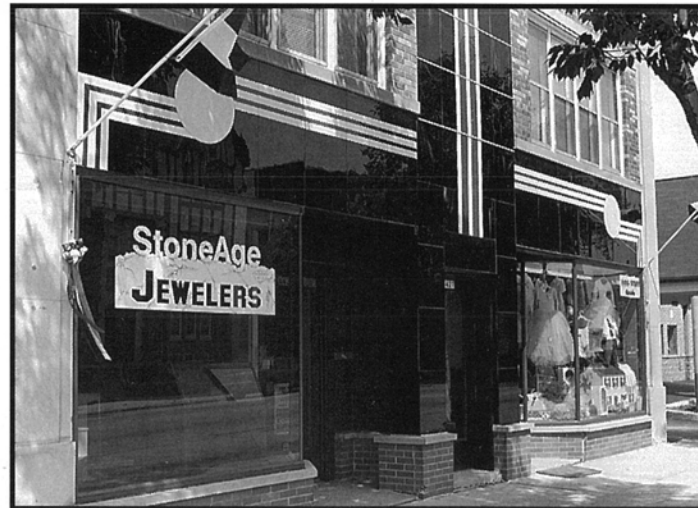
should be protected from the de-rusting chemicals which may cause permanent discoloration or etching of masonry or glass.

It is particularly important to properly maintain the exposed iron lintels that are commonly found on many late nineteenth century storefronts. Because a lintel is load bearing and helps to hold up the building, it is a wise investment to keep it rust free and well protected from the elements with a good quality metal paint.

STRUCTURAL GLASS

Carrara glass and Vitrolite, which were popular cladding materials for early modern and Art Deco style storefronts of the twenties, thirties, and forties were trade names of types of unique structural glass that were made in opaque white, black and other colors. They were often used as the primary cladding materials for entire street-level storefronts to produce a sleek, elegant, modern look. They were made by a special process and differ from ordinary plate glass in that they are significantly stronger and more resistant to breakage. Because they are no longer manufactured in America and are now considered valuable, Carrara glass and Vitrolite panels should always be preserved or salvaged and reused whenever possible. At the present time, a firm in Czechoslovakia is the only known manufacturer of Carrara glass.

Carrara glass was made in various finishes including satin, polished, and honed finishes and in thicknesses ranging from 1/2 inch to 1-1/4 inches. The polished finish, probably the most common for storefront applications in this area, has a mirror-like surface. The honed finish has a smooth surface that is devoid of any lustre, and the satin finish is recognizable by its rich, soft lustre. Structural glass is highly resistant to staining and is very long-lasting, but it will crack. Because it is presently difficult to find matching replacement pieces, custom-painted Lexan® plastic panels have been used successfully for the spot-repair of pieces of damaged or missing Carrara glass or Vitrolite. White and black salvaged glass can sometimes be found through demolition contractors and antique dealers, but it is important that the replacement piece



■ This storefront was clad in structural glass in the 1930s or 1940s when it was a highly fashionable material. Although once common, such storefronts are now rare and surviving ones should be preserved.

matches the original in terms of color and surface finish. Because colored glass was subject to noticeable variations in color from batch to batch, custom painted plastic panels are usually the only practical route to go for replacement pieces, rather than trying to find matching old pieces.

DESIGNING NEW STOREFRONTS

When a remodeled storefront on an older commercial building has no historic value, it is an acceptable practice to replace it with a new, period style storefront that is appropriate for the age and style of the structure. The best place to begin the design process is with old photographs or architectural drawings of the building, if they exist. More often than not, however, there is no pictorial record of the building.

Selecting a new storefront design should be based on the following criteria:

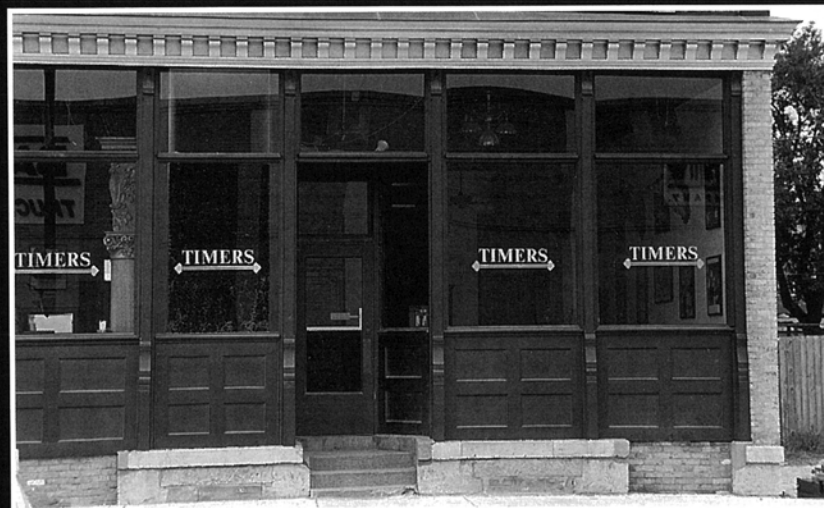
1. The style of the reproduction storefront should match the overall style of the building.
2. Storefront details that were associated with a particular architectural style should be faithfully reproduced.
3. Modernized or abstracted interpretations of historic storefront arrangements and details should generally be avoided.

In order to assess the appropriateness of a proposed design for a new storefront, compare it with drawings or photographs of historic storefronts in the style that is being reproduced.

MODERN STOREFRONTS OF TRADITIONAL DESIGN



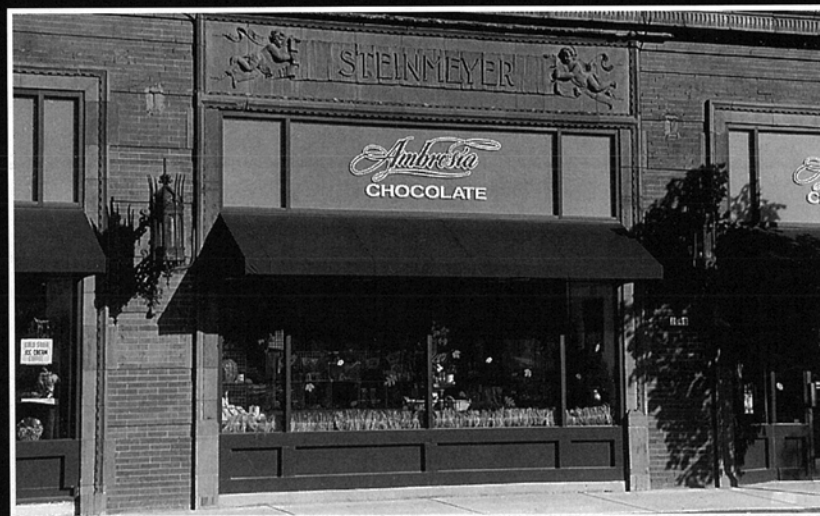
■ A traditional wooden storefront with multipaned windows for an 1870s or 1880s building.



■ A traditional wooden storefront with a transom for an 1880s building.



■ A new wooden storefront suitable for use on a 1900-1930 era building.

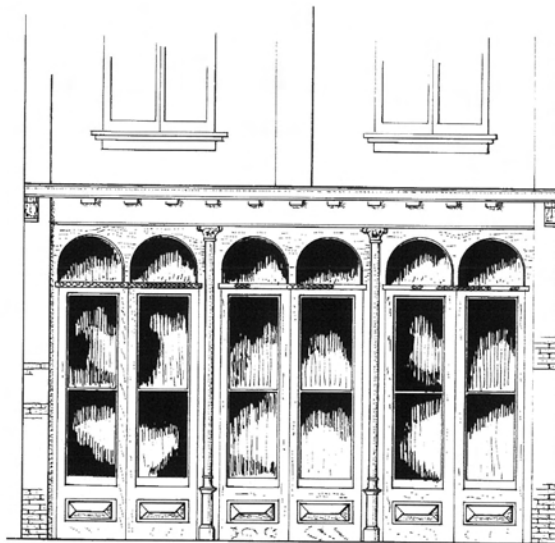


■ A new metal storefront of traditional design suitable for use on a building of almost any period.

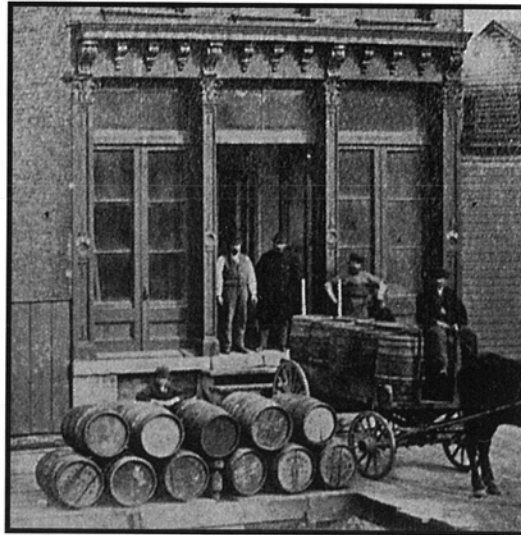
ITALIANATE STYLE STOREFRONTS

Italianate style commercial buildings in Milwaukee range from relatively simple, front-gabled clap-board-sided, wooden structures to finely-fitted masonry blocks trimmed with dressed stone, cast iron and extensive millwork.

There were two types of shop fronts commonly found on the Italianate style commercial buildings of the mid-nineteenth century: the display window front and the door front. The display window front typically featured one or more large, multipaned display windows that were permanently fixed in place, and a pair of double-leaf entry doors that were often set within a small recessed vestibule. The door front, on the other hand, was composed of two or more matched pairs of double-leaf doors set at the edge of the sidewalk between cast iron or brick piers. Generally, one set of doors was used as the primary entry and was sometimes offset slightly from the others. The door front enabled the entire shop front to be opened to the sidewalk and was often favored by wholesale firms and other businesses where the display of retail merchandise was not necessary. Today, in some cases, an adaptation of the door front might be a good choice for reconstructing a shop front on an Italianate style building that will be used for offices or a restaurant on the first floor. As a rule of thumb, a door front generally should be considered only for Italianate and Greek Revival style buildings, especially those that were originally constructed for wholesale firms, or where historical research or the placement of masonry piers or other physical evidence can establish that a door front was an original feature of the building.



■ This drawing shows a typical door front store with its three pairs of double doors.



■ This 1870s photograph shows a typical door front store building of a type that was commonly found in Milwaukee between 1850 and 1880. (Photo: Milwaukee County Historical Society)

The Italianate style shop front was often characterized by round-top or segmentally-arched display windows, doors and transoms. Sometimes only the top corners of a rectangular window were rounded or “radiused” to create the appearance of a roundhead window. Single pieces of glass in storefront windows seldom exceeded about 30 by 72 inches in size for even the most expensive buildings and consequently most commercial buildings featured divided light show windows composed of multiple panes of glass separated by very thin muntins. Divided light show windows were gradually replaced with large, single sheets of plate glass as the technology of window glass manufacturing improved during the late nineteenth century. Because the divided light show window was an important component of the Italianate style, the use of appropriate styles of divided light display windows in reconstructed storefronts is encouraged. The multi-paned Colonial style sash with many small lights is not appropriate, however, since Italianate style show window panes were fairly large, measuring perhaps 10 by 16 inches or larger.



■ This well-preserved Italianate storefront is typical of the 1870s.

STOREFRONTS

Cast iron was a very popular structural and decorative material for storefronts of the 1850s and 1860s. Better-class shop fronts of the era were typically trimmed with cast iron parts such as piers, window tops, glazing strips that held the windows in place, and ornamental pierced grillework that was installed over the tops of show windows. In fact, entire storefronts were sometimes clad with decorative, fireproof, cast iron panels. Milwaukee's Iron Block Building, located at 201 E. Wisconsin Avenue, is an exceptionally fine, but now unique, example of a business facade that is completely clad in cast iron. The popularity of cast-iron clad storefront architecture came to an end in the 1870s, but cast iron structural piers were widely used for storefront construction well into the twentieth century.

Most of the city's brick or frame Italianate style commercial buildings were fairly modest in scale.



■ The Iron Block, built in 1860 at 201 E. Wisconsin Avenue, is Milwaukee's finest example of a cast-iron fronted building.

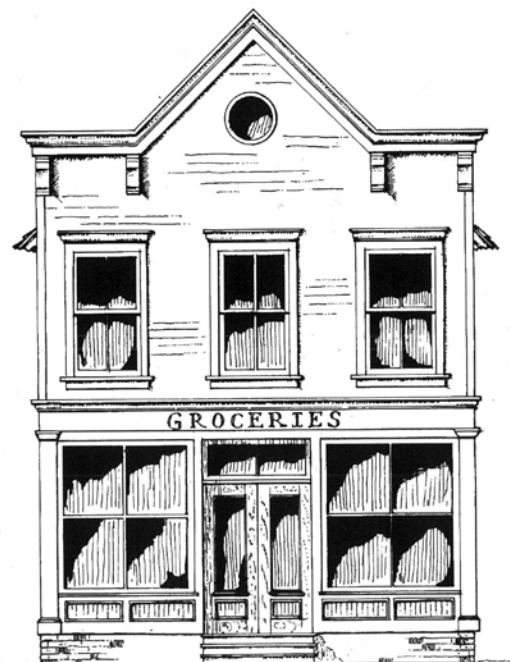


■ This 1870s photograph of 307 E. Wisconsin Avenue shows that this 1867 building originally had ornate cast iron window framing and storefront decoration. (Photo: Milwaukee County Historical Society)

Nevertheless, they conveyed a sense of simple elegance that can be successfully revived today with pleasing results. The typical building was composed of a small, street-level storefront and a second story shopkeeper's flat. Storefront display windows were fitted with divided light, fixed wooden sash that were seldom topped with a separate transom. Large, double leaf, glazed doors set within a small vestibule opened into the store. A separate, wooden, paneled door trimmed with rolled panel moldings was usually



■ This 1870s photograph depicts a typical small Italianate style brick commercial building. (Photo: Milwaukee Public Library)



■ This is a drawing of a typical, small, frame, two-story Italianate commercial building of a type commonly found throughout the older parts of Milwaukee.

located off to one side of the facade. It opened to the stairs that lead to the shopkeeper's flat on the second story.

Simple, wide, flat corner boards, sometimes trimmed with a molded wooden base block, finished the corners of the storefront. Some of the better-fitted wooden buildings were trimmed with millwork that emulated the more expensive paneled cast iron pilasters or piers. The box cornice above the shop front was usually placed above a wide, frieze board. Dentil blocks or corbels were sometimes used to trim the soffit of the projecting boxed cornice. A low-pitched, front gabled roof topped the building and round-arched or segmentally arched windows fenestrated the second story facing the street. Sometimes a round or four-lobed quatrefoil window was centered in the gable.

QUEEN ANNE STYLE

The Queen Anne style was the dominant commercial style between about 1885 and 1900. Many of the city's surviving, nineteenth century neighborhood commercial buildings date from this prosperous period.

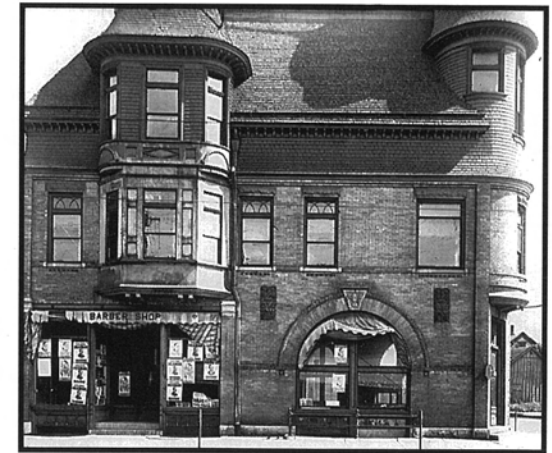
The Queen Anne style storefront was characterized by the extensive use of large, exceptionally tall, plate glass display windows made of a single piece of glass. The first prism glass transoms, designed to focus natural light deep within the interior of the building, were introduced during the 1890s and immediately became immensely popular, but clear glass



■ A typical modest, brick, Queen Anne style commercial building on Lincoln Avenue.



■ An early 1900s photograph of a Queen Anne style corner store. (Photo: Milwaukee County Historical Society)



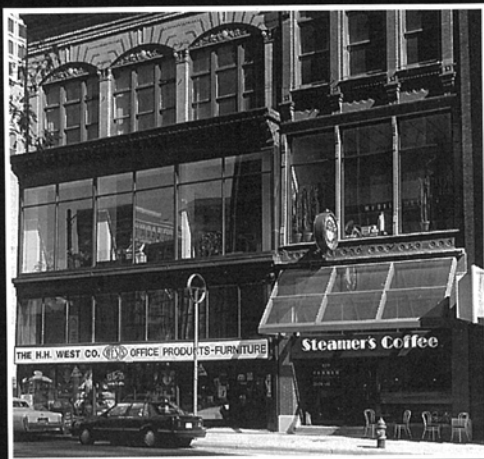
■ A 1920s view of a brick, Queen Anne style, corner commercial building. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)

transoms, sometimes intricately divided into smaller lights and bordered with colored glass panes, were more prevalent until after 1900.

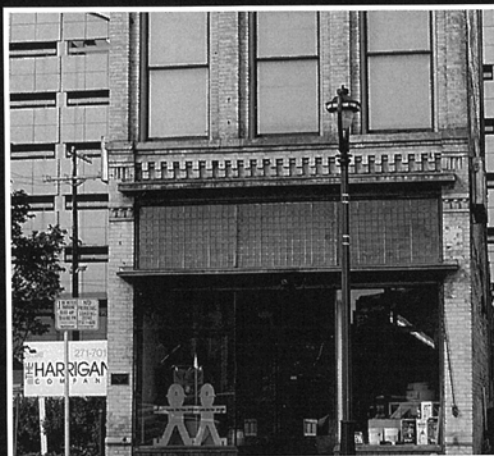
The cornice work of the Queen Anne era was lighter in character and more intricately patterned than the massive, heavy, rolled sheet metal and bracketed wood cornices of the 1870s and early 1880s. Pressed, decorative sheet metal panels were used widely for the cladding of entire storefronts in other areas of the state and country, but for some reason were never very popular in Milwaukee. Pressed ornamental sheet metal was, however, used extensively here to ornament cornices, oriel windows, and turrets.

During the 1890s, polished plate glass became affordable for even small, neighborhood commercial buildings. It was probably during this time that many older storefronts with divided light wooden show

EARLY 20TH CENTURY STOREFRONTS



■ A turn-of-the-century all glass storefront.



■ An early 1900s storefront with a prism glass transom.



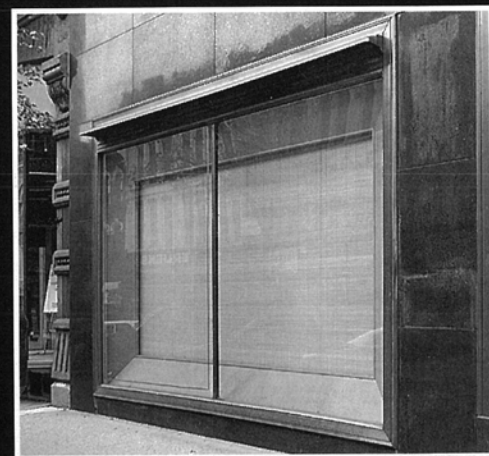
■ A 1915, arched metal storefront with a prism glass transom.



■ A typical block of 1920s Commercial style storefronts. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)



■ A 1920s Mediterranean style metal storefront.



■ A 1930s modern style storefront.

windows were refitted with new, large, plate glass display windows set in metal glazing strips.

Storefront doors were typically glazed with polished plate glass that was sometimes bevelled. The front door was often trimmed with fine, Queen Anne style, decorative millwork.

Larger, more expensive masonry commercial buildings typically featured rectangular cast iron piers that were fluted or reeded and trimmed at the bottom with a molded base block. The round columns and piers common during the Italianate period went out of fashion. Exposed steel and wrought iron lintels that were trimmed with applied cast iron or sheet metal decorative rosettes appeared during the 1880s and became a common feature.

EARLY TWENTIETH CENTURY STOREFRONTS

Many original early twentieth century storefronts have survived mostly intact and are excellent candidates for rehabilitation. There are, however, also many early twentieth century buildings that have already lost their original storefronts to insensitive remodeling projects, and their owners may want to rebuild these storefronts in a more appropriate period style.

Early twentieth century storefronts, those dating from about 1900 to 1940, are characterized by a less fussy and more streamlined appearance than the intricately compartmentalized storefronts of the nineteenth century. A glazing system that permitted large plate glass display windows with a minimum of visual interruption from structural framework was one of the

hallmarks of early modern style storefront design.

Corner joints between large sheets of plate glass were made with thin, special metal molding strips or clamps that were almost invisible when viewed from a distance. Transoms tended to be glazed with prism glass or obscure frosted or patterned glass, sometimes inset with the name of the business in colored glass letters.

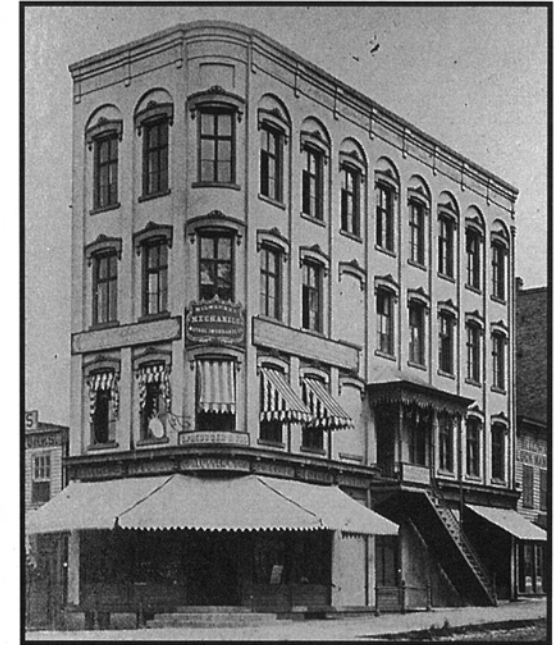
There was also an increased use of permanent, low maintenance construction materials such as marble, brick, copper, limestone, and glass. Bulkheads, for example, tended to be made from flat, undecorated panels of stone, marble, tile or copper rather than the frame-and-panel, wooden bulkheads that were common in the nineteenth century. Storefront cornices, too, were de-emphasized and often were eliminated or else simplified into shelf-like projections. By this time, one of the principal functions of the storefront cornice was to shelter a rolled-up awning.

SPECIAL STOREFRONT FEATURES

Too often details such as awnings, security gates, and vestibule floors are taken for granted, yet they all have a significant impact on the overall appearance of a storefront. Because these are all "custom" items, it makes good sense to carefully consider all options before making any final decisions.

AWNINGS

Awnings are again becoming fashionable storefront fittings, just as they were years ago. Retractable or roll-up canvas awnings were important, multi-purpose architectural features that were commonly found on



■ An awning that wrapped around the corner sheltered the storefront of this large Milwaukee building in 1885. (Photo: Milwaukee County Historical Society)



■ Awnings were used to control sunlight, provide signage, and draw attention to this small neighborhood corner ice cream parlor in the early 1900s. (Photo: Milwaukee Public Library)

many, if not most, storefronts before 1940. An awning can help cool a store in hot weather, shield the window displays from strong sunlight that could fade the merchandise, reduce glare on the display windows, and shelter an area on the sidewalk that could be used for retailing purposes. As an adjunct to outdoor signage and advertising, the awning can be imprinted with the name of the business, an address, and perhaps an eye-catching logo.

Many awnings were striped in blue, brown, black, green, or red on a white or buff-colored field. Some manufacturers differentiated between striping patterns that were “fancy” and “extra fancy.” Some



■ These traditional style awnings on the upper story of an old commercial building are both decorative and functional.

AWNINGS



■ A traditional retractable awning without side panels is one of the simplest awning styles.



■ When an awning is retracted into an awning box, it practically disappears.



■ A traditional tent-style awning with side flaps can be either operable or permanently fixed in the open position.



■ Awnings can be made in virtually any shape, like these elliptical fixed awnings made to fit within the arched masonry opening of these 1920s storefronts.

awnings were fitted with slotted openings in order to direct more light and ventilation to the interior through transom windows.

There was actually very little stylistic change in awning design throughout the late nineteenth and early twentieth centuries. Awnings installed today over a storefront should reflect the straightforward designs of years ago which are easily duplicated by today's awning manufacturers. Historically, awnings were made of cotton canvas, which faded and deteriorated relatively quickly. Today's modern acrylic materials, however, look the same, but last much longer and have better color retention.

It is recommended to avoid the installation of a modern, shiny plastic, waterfall or bubble-type awning. Although most modern awnings are permanently fixed in place, retractable awnings have many advantages that should be considered before discounting that option and choosing a permanently fixed one. Some awning manufacturers still can furnish retracting awning mechanisms that can be reinstalled today and function like new. Retractable awnings are more advantageous for energy conservation and can be retracted to avoid wear and tear during severe weather.

STOREFRONT SECURITY

Storefront security has always been an important concern for merchants. Today, an increasingly common method of storefront protection is the installation of roll-up metal doors or retractable, scissors-type security gates over the display windows. Permanent metal bars are

also sometimes installed on either the inside or outside of display windows. None of these security measures can generally be recommended because each creates the impression that the retail area is unsafe, particularly when a gate or metal door is drawn closed. This does not contribute to a pedestrian-friendly environment and ultimately hurts business. They can also be unsightly and are generally out of character with the architecture of the storefront. Sensible, alternate methods of storefront protection can be found by combining security methods of the past with modern materials.



■ Before 1890, paneled shutters were sometimes installed over storefront display windows at closing time to provide night-time security and removed when the business reopened in the morning. In this c. 1870 photograph, the merchant has just opened his shop and the shutters are still laying on the sidewalk. (Photo: Milwaukee County Historical Society)

During the 1870s and 1880s when display windows were made primarily of single-strength common glass, which was easily broken, shopkeepers put up heavy wooden shutters over display windows at closing time and took them down again in the morning when the business opened.

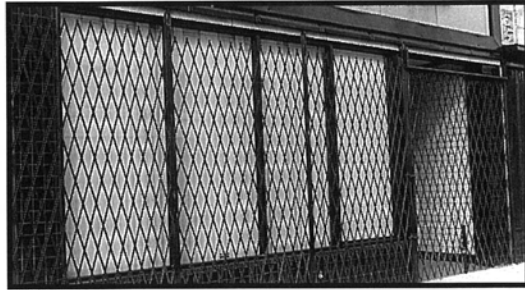
The use of shutters for security began tapering off around 1890 when thick, heavy, plate glass storefront windows became increasingly common. Many storekeepers then believed that plate glass, which was much harder to break than thinner, common glass, was a deterrent to thieves and made the use of shutters unnecessary.

Although in most retail areas today there is no need for any type of storefront security grate, in some higher crime areas, it may be preferable to revive the nineteenth century security practice of installing removable wooden or metal shutters on either the outside or the inside of a display window that could be vulnerable to vandals or thieves during non-business hours. The shutters can be made in an attractive style that is compatible with the architecture of the storefront. An alternative to solid panels would be to have wooden or metal frames glazed with unbreakable clear LexanR or MargardR to close over the display windows. That would still allow shoppers to see the merchandise in lighted display windows at night but prevent the windows from being broken.

When security was required, the glass in a storefront door was traditionally protected with a permanent grille of steel or iron bars, and that is still an acceptable practice today. A simple, grid-like pattern

STOREFRONT WINDOW SECURITY DEVICES THAT SHOULD BE AVOIDED

These types of storefront window security devices detract from the appearance of a commercial building and create a bad public image for the entire commercial area by conveying the impression that the area is unsafe for pedestrians.



■ A retractable scissors-type security gate can at least be retracted during the day so that it is not visible during business hours. It would be better to mount a scissors grate inside the windows.



■ Interior-mounted bars create a prison-like appearance that inhibits the viewing of merchandise placed in the windows.



■ Fixed-in-place, exterior-mounted bars are the worst choice because they are so visible and are intimidating to customers.

is suitable for most architectural styles; the elaborate, heavily foliated, New Orleans style, cast metal door guards often seen today should be avoided. Expanded metal diamond mesh should also be avoided.

It is also possible to replace plate glass windows with large sheets of unbreakable plastic glazing materials. This is an extreme measure and is recommended only if the alternative would be the installation of roll-up metal doors or steel security grates. Only clear, polycarbonate plastic, such as Lexan[®], with a scratch-resistant coating, such as Margard[®], should be used. Other types of clear plastic, such as Plexiglas[®], are not scratch resistant and less resistant to breakage. One drawback to using any clear plastic glazing material is that it may yellow after prolonged contact with sunlight.

An alternative to using plastic glazing is to use laminated glass or to have ordinary existing glass coated with a plastic laminate coating. This will not keep the glass from being shattered, but it will ensure that it does not break completely, thus preventing a thief from entering the store or stealing goods from the display window. The shattered glass will remain in one piece until it can be replaced.

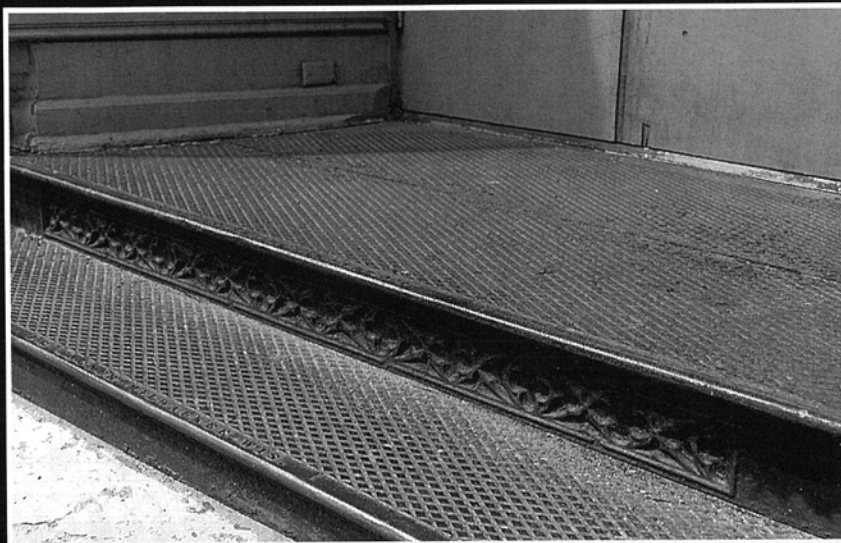
VESTIBULE FLOORS

Storefront entry doors are typically set within a recessed vestibule. In a sense, the vestibule flooring material was like a welcome mat to patrons, and it is a detail that, if properly planned, can greatly enhance the entrance to a store. Some original vestibule floors have survived intact, but many more have been badly damaged, insensitively altered, or removed. With the

traditional building materials being manufactured today, it is generally possible to duplicate the appearance of an old vestibule floor. Of course, an original vestibule floor should be restored and preserved whenever possible, and today's technology makes it possible to do that as well.

During the nineteenth century, it was common to find vestibule floors made of textured wrought iron, cast iron, stone slabs, or ceramic tiles. Although they are not as common in Milwaukee as in other cities, cast iron storefront steps and vestibule floors are again being manufactured today, and they are a good choice when a period style effect is desired for a reconstructed storefront that is several steps above the sidewalk, providing there is another handicap accessible entrance to the structure. Old wrought iron and cast iron stoops or vestibule floors should be sandblasted

METAL STOOPS



■ Metal stoops were once common in Milwaukee, and many examples still survive in good condition after 100 years of use.



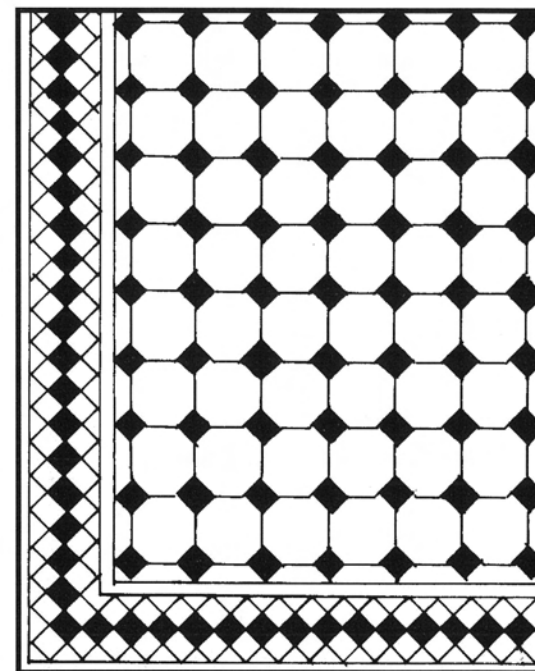
and then given a metal primer coat followed by at least two coats of a good quality metal paint. A two-part epoxy paint is preferable.

Some of the finest vestibule floors of the nineteenth century were finished with special “encaustic” clay tiles that were imported from England. Known for their rich, satin finish and deep, mellow colors, encaustic clay tile is a superior quality, long-lasting material that is still being made today in historic patterns. In fact, some of the new encaustic tiles can actually be used to make repairs to damaged, original encaustic tile floors. Encaustic tiles would be a good choice for finishing a High Victorian Gothic, Italianate or Queen Anne style vestibule of the 1870s, 1880s or 1890s.

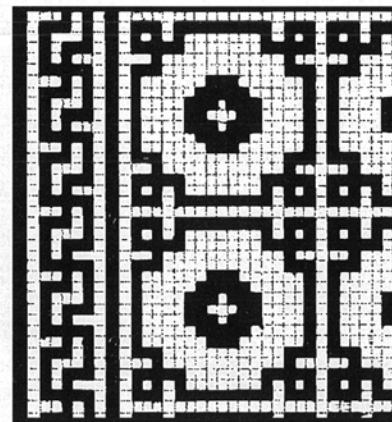
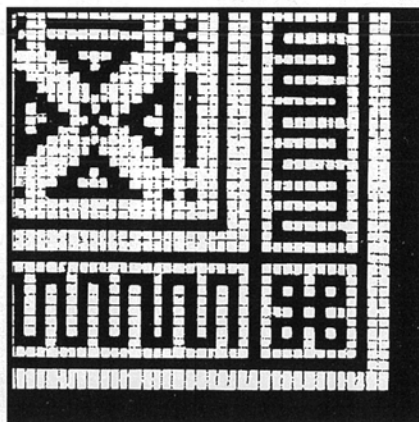
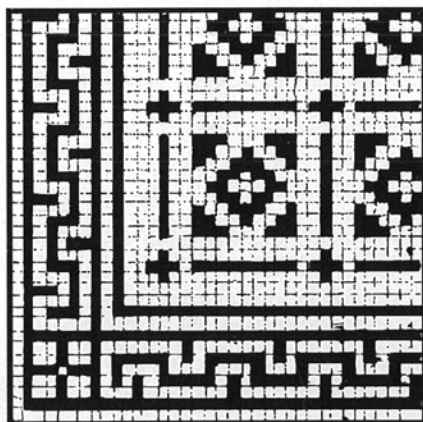
After the turn of the century, vestibule floors were more commonly finished with very small ceramic tiles (1-inch square or octagonal) that were

laid in geometric patterns with a contrasting border or accent color. Sometimes the accent tiles spelled out the name of the business. The most common colors were white, buff, gray, green, brown and salmon. Since these tiles are still being manufactured today, creating a period effect should be a straightforward job for any experienced tile setter who is given precise plans.

Polished terrazzo, which is essentially a smooth, finely polished aggregate of small stone chips set in concrete was a very popular vestibule floor material from the late teens through the 1950s. A terrazzo floor was often bordered with thin bronze or stainless steel strips. Genuine terrazzo floors are no longer installed, but a modern polished resin floor looks nearly the same and is an acceptable substitute. Old, damaged terrazzo can also often be successfully patched using resin floor materials. ■



■ An 1880-1900 period encaustic tile vestibule floor design.



■ Three designs for vestibule floors made of 3/4-inch-square ceramic tiles suitable for buildings built between 1900 and 1925.

GLASS





■ An 1870s display window divided into many small panes of glass. (Photo: Milwaukee Public Library)

Some of the most significant changes in storefront design over the years have been closely linked to advances in the manufacture of glass. Between 1850 and 1900, improvements in glass manufacturing processes resulted in a steady progression in storefront display window construction that made it possible for show windows to evolve from small panes of glass set

■ Preceding page: A typical plate glass display window in the 1920s. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)

in a lattice-like wooden framework to the wide, floor-to-ceiling sheets of distortion-free plate glass that we are used to seeing today. New-found technology also made it possible to produce affordable, decorative and patterned glass that could be used to trim storefronts and, in some cases, actually improve the distribution of natural light inside a building. Because glass is a key element in defining the architectural character of a storefront, it is important to carefully consider all of the appropriate, historic and modern glazing options.

PLATE GLASS

For more than 150 years, polished plate glass has been considered to be a premium material for glazing storefront windows. Plate glass, which can be made in dimensions ranging from 1/8-inch to more than 1-inch thick to suit a wide range of applications, is known for its superior clarity and good strength. Before 1875, plate glass was very expensive, usually imported from Europe, and used only for the very highest class of construction. Most storefronts before that time were glazed with smaller pieces of thinner and less expensive common window glass which often had significant distortion and flaws. The largest sheets of plate glass commonly available in the 1870s measured about 3-1/2 feet by 6 feet and were very costly. This fact should be kept in mind when designing a new reproduction style storefront for a building of that vintage, if authenticity is important, so that the panes of glass don't turn out to be too big. From the 1880s into the early 1900s, improvements in the American glass industry made it technically possible and economically feasible for even

fairly modest buildings to have large plate glass display windows. Windows got bigger and bigger until finally, in the early 1900s, huge sheets of glass as much as 12 feet wide and 10 feet tall were being used to glaze storefronts. Today's plate glass can be cut to any of the historic sizes, although retaining old plate glass, particularly if the panes are very large, might be the best way to go in some cases.

TINTED GLASS

Modern tinted and mirror-like glazings should not be installed on most older plate glass storefronts because they are not compatible with the architectural character of older buildings. It is true that tinted glazings can reduce heat loss and gain, compared with standard plate glass, but if energy cost is a major concern, then it might be preferable to install modern, clear insulating glass, which is composed of two sheets of glass with a sealed air space of about 1/4-inch in between them. Compared with a single sheet of window glass, insulating glass has at least double the insulation value but it may not possess the same clarity as a single thickness of fine plate glass. Fogging on the inside of an insulating glass unit can occur if the seal between the sheets deteriorates or is broken and then the window would have to be replaced. Despite some potential drawbacks, insulating glass is a very desirable material because of its energy saving qualities. Insulating glass can be made-to-order in nearly any size that would be needed for a traditional storefront and it usually has to be "tempered" in order to meet mod-

ern building codes. Tempered glass, which is specially heat-treated, is stronger than ordinary glass and safer because it breaks into tiny cubes instead of large shards.

PATTERNED GLASS

A special purpose glass that features an obscured surface to admit light without permitting vision through it is called patterned glass. Valued for both its ornamental effect and light-diffusing qualities, patterned glass was sometimes installed in storefront transoms, basement windows, and glazed entry doors.

Some types of patterned glass are particularly useful today as an attractive and economical means to obscure the view through a storefront transom that has a modern dropped ceiling behind it. When used appropriately, patterned glass can have a complementary, character-boosting effect on an older storefront.

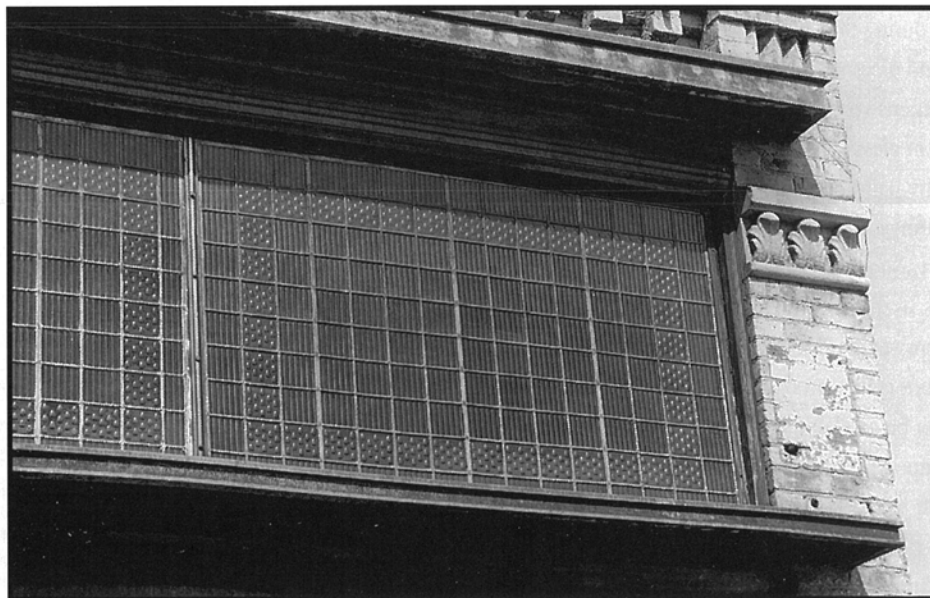
PRISM GLASS

Prism glass, which is engineered to gather natural light from the outside and refocus it deep into a room, was an important innovation that was introduced about 1890 and remained popular into the 1930s. Today, the energy saving potential of prism glass is slowly being rediscovered.

From a distance, prism glass has the visually-pleasing appearance of decorative leaded glass. It was typically installed in a transom above a storefront window or a door. Prism glass was made in 4- or 5-inch squares with a smooth outer surface and an inner,



■ A storefront with a prism glass transom in the 1920s. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)



■ Detail of a prism glass transom.

molded surface that is composed of many tiny, faceted prisms that can refocus light deep into a room by an optical principal called refraction. Prism glass does not actually increase the amount of light entering an interior, but it does effectively redistribute it.

Each prism was precision-molded in order to redirect light at a specific angle and by installing prisms of different refractive capabilities in the same transom, some light could be directed to the rear of the room, some to the front, and some to the middle. Prism glass reduced the dependence on electric or gas interior lighting during daylight hours, and, according to one report from years ago, "The saving in artificial lighting effected by prism glass is so well recognized that formulas for [proper installation] have become highly exact."¹

The demand for prism glass windows gradually decreased during the 1930s as architectural tastes changed and electric lighting became more efficient and less expensive.

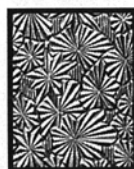
Prism glass is often found today hidden or obscured by paint or signage in the transoms of older buildings. Prism glass is no longer made, and the preservation of the remaining glass is important. Besides its useful and interesting capacity to redirect light, prism glass adds a unique visual character to the exteriors of period storefronts. Salvaged prisms may be available to repair damaged transoms, but it is important to carefully match replacement pieces with the existing glass so that the replacement tiles do not stand out, since prism glass was made in various patterns.



■ A 1920s storefront with a figured glass transom. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)

FIGURED GLASS PATTERNS

FLORENTINE



SYENITE



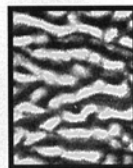
MAZE



ROMANESQUE



ONDOYANT



RIPPLED

FIGURED GLASS

Patterned sheet glass that was molded with a decorative, light-obscuring pattern on one side is called figured glass and, like prism glass, it was valued for both its excellent light-diffusing qualities and its ornamental effect. Figured glass is closely associated with early twentieth century commercial architecture, and it probably reached the peak of its popularity during the 1920s. The glass was made in many different styles. Some patterns, such as rippled, ondoyant and syenite

¹ Glass, Paints, Varnishes and Brushes. Pittsburgh: Pittsburgh Plate Glass Co., 1923, p. 133.

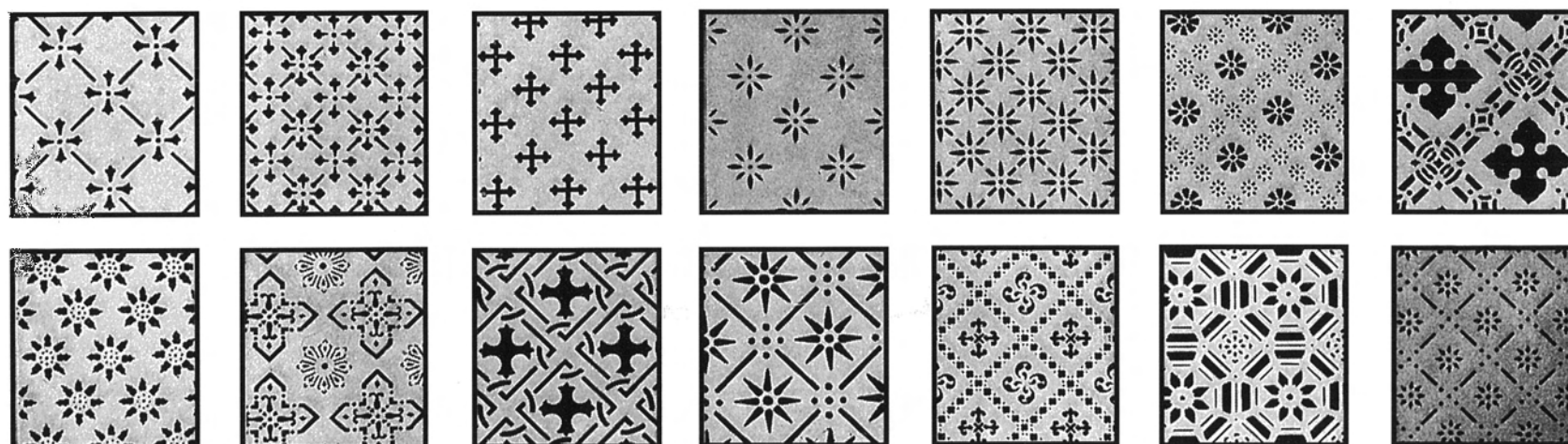
would be particularly appropriate for glazing the transoms and basement windows of early twentieth century storefronts. Salvaged pattern glass is relatively easy to find through wrecking contractors, and some new patterned glass is still manufactured. Some of the most recognizable historic patterned glass styles, such as Florentine, Maze and Romanesque, are not recommended for storefront glazing purposes because they have traditionally been used for glazing bathroom windows and interior office doors and partitions rather than for exterior commercial applications.

FROSTED/SANDBLASTED/ACID-ETCHED GLASS

Frosted glass has long been used in storefront transoms and is still available today. It is a good choice to use when a dropped ceiling on the interior will abut a storefront. Sandblasted glass and its look-alike, acid-etched glass, is easily recognizable by its grainy, frosted finish. These glazing products are still available



■ A 1920s storefront with a frosted glass transom. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)



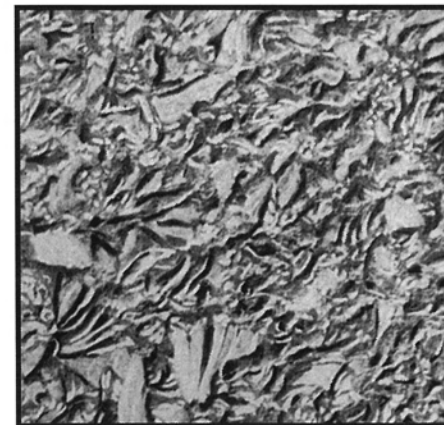
■ Some of the more common sandblasted/etched glass patterns.

today and would be a good choice when an obscured glazing material is required for the transom of an older storefront. Sandblasted or etched glass can be made in an almost limitless variety of stencilled patterns. Ornamental stencilled glass is particularly appropriate for use on storefront doors of pre-1900 vintage.

GLUE CHIP GLASS

Glue chip glass, which has a very attractive obscured surface that strongly resembles the delicate beauty of frozen ice crystals, was commonly used between about 1885 and 1910 in storefront transoms and glazed doors. A glue chip panel for a storefront transom was often formed with clear glass lettering, an address, or an ornamental border, and sometimes the lettering was gold-leafed or enameled in black to make it stand out.

During the late nineteenth century, glue chip glass was considered a premium material, and it is still available today. Stock sheets of glue chipped glass would be an excellent choice for glazing a transom. Custom bordered and lettered panels for doors or transoms can still be made by ornamental glass specialists. ■



■ Two glue chip glass patterns.

SIGNAGE



Successful businesses today depend to a great degree on good advertising. A sensitively rehabilitated older commercial building is, by itself, an outstanding form of advertising because a handsomely restored commercial building will stand out from its undistinguished neighbors. A building's signage should always complement its architecture. Signage that is too abundant, too large, out of place, or stylistically inappropriate conveys a poor image of the business and will also detract not only from the aesthetic appeal and historic character of the building it is attached to, but also from the entire neighborhood. Exterior lighting is another advertising device that, when properly installed, can dramatically emphasize a business by highlighting the facade, signage and display windows of a building at night.

SIGNAGE

The primary purpose of a storefront sign is to identify the location and nature of a business to the public. Attractive, traditional signage is often relatively inexpensive when the cost is figured over the long service life of a sign. Unlike other popular mediums of advertising that are short-lived, such as direct mailings, billboards and newspaper advertisements, storefront signage can attract attention continuously over a period of many years. In fact, storefront signage is probably one of the best overall advertising values today. It is simply a matter of good economy to choose a sign with lasting appeal that is appropriate in design

■ Preceding page: The John Thompson plasterworks in the 1870s. (Photo: Milwaukee County Historical Society)

for the building it is to be mounted on and the business it is advertising.

There are many types of traditional signage that are appropriate for use on older storefronts including:

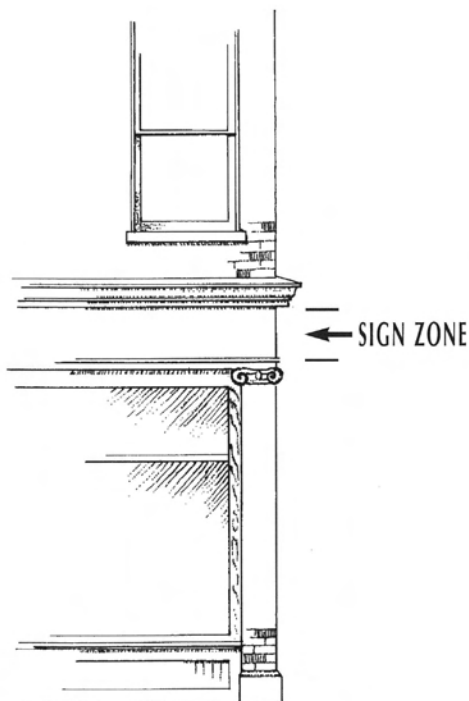
1. Raised or painted letters on a flush-mounted signboard.
2. Awning signs.
3. Gilded or painted letters on storefront display windows.
4. Wall-mounted cast bronze plaques or tablets.
5. Hanging signs mounted on brackets that project from a wall.
6. Sandblasted or etched structural glass signage.
7. Leaded glass transom lettering.
8. Neon signage.

The most common types of traditional signs, appropriate for nearly any pre-1940 commercial building in the city, are flat, flush-mounted signboards with raised or painted letters; gilded or painted lettering on the storefront display window; lettering sewn or stenciled on the flap of an awning; hanging signs; and cast bronze wall-mounted plaques.

As important as the style of the sign itself is where it is mounted on the building. Shop front signage must be located within specific zones on the front of a building in order to capture the attention of pedestrians and motorists and to complement or, at least not detract from, the architecture of the building.

Many older commercial buildings were actually designed with a sign zone, a large, flat area immediately above the shop front display windows where signboards were intended to be located. The primary signage should be confined to this area if at all possible, so it will complement the building's architecture and prevent a haphazard or cluttered looking building front. Signs should never project above the sill level of the second story windows. Very often the design of the storefront dictates which type of signage is most appropriate and will be the most effective. Display window lettering, for example, might be the most practical and visually effective form of signage if there is simply no room on the storefront to install a flush-mounted signboard above the display windows without covering up windows or architectural elements.

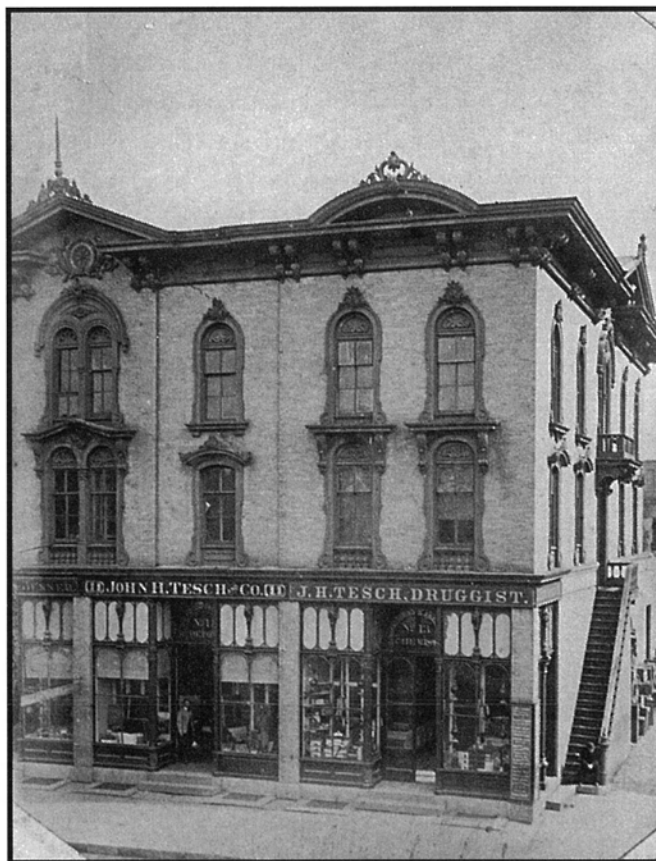
One of the most important things to keep in mind about signage is that one well-designed, appropriately sized and located sign is better than five poorly-designed signs. It is a great mistake to clutter the front of a building with multiple signs, as is often done on the mistaken premise that the more signs a business has the more the public will be attracted to it. In fact, just the opposite often occurs, since people are confused and repelled by signage that tries to convey too much information or creates a cluttered, disorganized image of a business. When signage becomes too loud or abundant, it no longer works to attract patrons because the mind no longer is capable of quickly sorting out the multiple messages being presented and tends to ignore the signage as mere visual pollution. When businessmen begin to compete with each other by trying to outdo their neighbors' signage



■ On many traditional storefronts, the signage was intended to go in a narrow band above the storefront called the sign zone.

with more and bigger signs, the entire visual character of a commercial strip can be changed to a tawdry, cheap image that may actually hurt business.

The modern, internally-lit, plastic faced box sign that is widely used today is generally not recommended for use on older buildings. The box sign is composed of a translucent plastic facing attached to a metal box frame that contains lighting equipment. Box signs have a bulky, modern, machine-made appearance that looks out of place on an older building that was intended to be fitted with thin, traditional sign boards.



■ A photograph of the J. H. Tesch Drug Store in the 1870s showing a traditional signage scheme with the lettering confined to the sign zone. (Photo: Milwaukee County Historical Society)

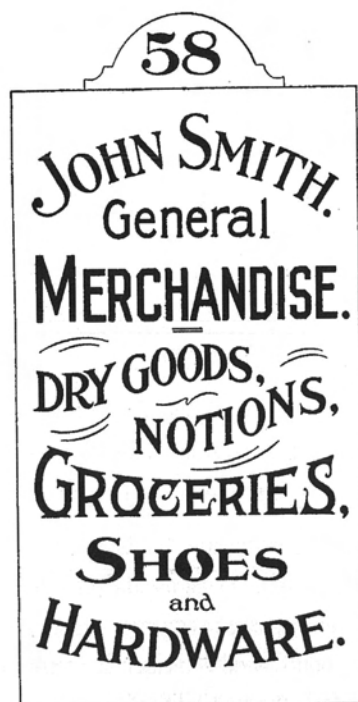
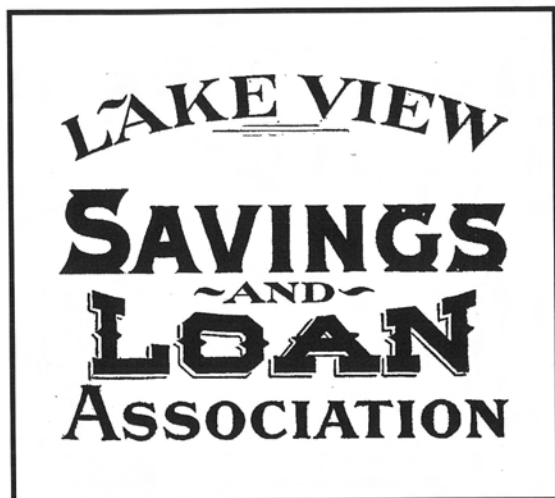
Compared with modern, internally-lit box signs, the design possibilities of traditional types of signage are more extensive and the visual effects can be much more aesthetically appealing and impressive. By suggesting that traditional signboard signage is highly desirable, we are not advocating the use of “rustic” signage made with rough-sawn lumber or old barn

boards because these signs do not create the antique or historic appearance that they are intended to, but rather look crude and frontierish and are out of character with Milwaukee’s sophisticated urban streetscapes.

Traditional signs were designed in accordance with specific, well thought-out principles that should be kept in mind today whenever a new sign is made for an older storefront.

1. Lettering should be readable and not crowded. Remember that even very large letters that are crowded together are difficult to read from a distance. Raised letters and painted letters with shadowing always require extra spacing.
2. When a sign contains more than one line of text, the different lines should be varied in lettering size. Different lettering styles were even sometimes used for different lines of text.
3. A sign should not feature more than three or, at most, four different colors; a two-color sign can be very effective.

4. Keep the information on the sign to a minimum and avoid clutter. Do not use the primary storefront architectural signage to advertise credit card logos, business hours, or other incidental information that detracts from the readability of the primary message of the sign.



■ Two traditional lettering schemes using different styles and sizes of type.

Choosing a proper lettering style is vital to the appearance of most signs. It is important to understand a few basic facts about lettering in order to make informed decisions about signage that will effectively convey the intended message and enhance the architecture of an older storefront. There are three major categories of lettering, each of which include many individual substyles. The three are “serif,” “sans serif,” and “ornamental.”

A serif is a small, stroke-like projection at the top and bottom of a letter. Serifs reputedly originated with ancient Roman masons who terminated each lettering stroke in a slab of stone with a serif in order to correct the uneven appearance made by their tools. Serif style lettering is timeless in design and variations of it are still very popular today.

Letters that have no serif at all and are simply squared off at termination points, such as common block letters, are called “sans serif,” which means “without a serif.” Ornamental lettering is a catch-all category for a host of specially designed serif, sans serif and script-like lettering styles that are designed to reflect a special theme or mood. Serif and sans serif letters are popular for signage because they are generally easy to read and will complement many different architectural styles. Ornamental letters should be used with caution for sign work, primarily because they are often difficult to read from a distance.

Some of the most attractive signs are embellished with genuine gold leaf lettering, which has an unmistakable bright glow that enhances the appearance of a sign like no other material. Because of its highly reflective nature, gold leaf on a sign can often be seen at night even without direct illumination. This feature made the material a favorite with sign-makers years ago in the days before electric illumination. There is simply no convincing substitute for the eye-catching appearance of genuine gold leaf, which will last twenty years or more outdoors without tarnishing. Gold substitutes such as “bronzing” paints or imitation gold leaf sheets contain copper and will only appear shiny and golden for a short period of time before they dull and tarnish to a lackluster brownish color. Using gold leaf is not as expensive as one might think because enough material to cover about two square feet costs less than forty dollars. Gold leaf is



■ As this historic photograph shows, painted signboards were once the preferred type of signage. (Photo: Milwaukee Public Library)

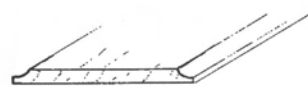
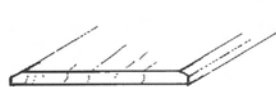
best used sparingly in sign work, as a small amount of gold leaf goes a long way in gilding letters or decorating a signboard. It is a particularly good material to use for the lettering on storefront display windows or glass entry doors. Many sign professionals today are experienced with gold leaf work and can produce outstanding results.

PAINTED SIGNBOARDS

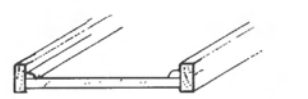
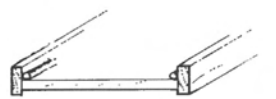
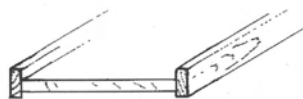
A flat signboard with hand-painted lettering was probably the most common type of architectural signage for older commercial buildings in the city. Painted lettering can accommodate an immense range of design effects, and it is still one of the most cost effective types of commercial signage.

Signboards were usually flat, rectangular, wooden or metal-clad panels that were enframed by a simple rolled molding or a backbanding. The board itself was typically painted a dark color, such as green, black or chocolate brown, and the letters were either painted in a contrasting colors, such as cream or white, or gilded with genuine gold leaf, although a light colored background with dark lettering was also sometimes used. The signboard was also often trimmed with a simple painted or gilded pinstriping motif near the edge. During the late nineteenth century, flat painted lettering was sometimes enhanced with a shadow or shading to simulate the appearance of three-dimensional raised letters. Signage with shaded lettering should generally be reserved for storefronts constructed before about 1905.

SIGNBOARDS CAN BE MADE IN MANY STYLES

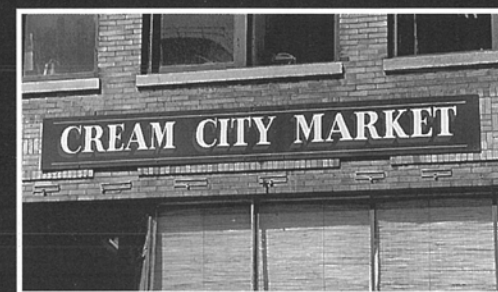
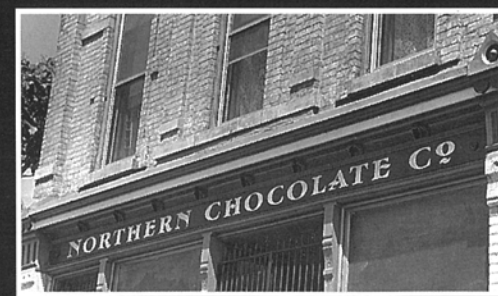


FLAT BOARDS WITH MOLDED EDGES



BANDED BOARDS WITH RAISED EDGES

THREE EXAMPLES OF MODERN PAINTED FLUSH-MOUNTED SIGNBOARDS

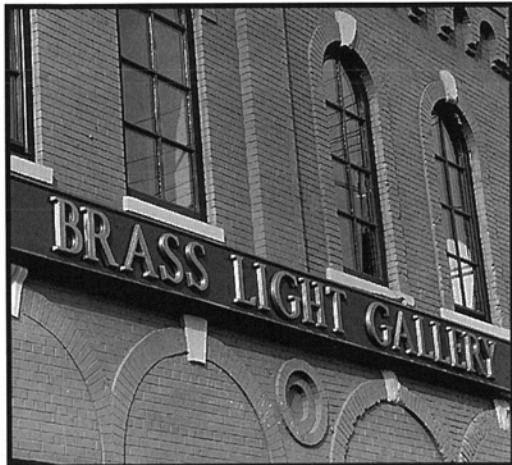


sans serif lettering on virtually any older commercial structure. During the nineteenth century some of the more conservative ornamental lettering styles were also used for sign work, but signmakers tended to avoid fussy, ornate lettering styles because they recognized that they are frequently difficult to read.

RAISED LETTER SIGNBOARDS

The flat signboard with raised, individual letters was a very common type of commercial signage in Milwaukee before about 1940, and it is still one of the best types of signage. Easy to construct and very attractive, the design of this signage has changed very little over the last 150 years, a testament to the fact that good design never really goes out of style.

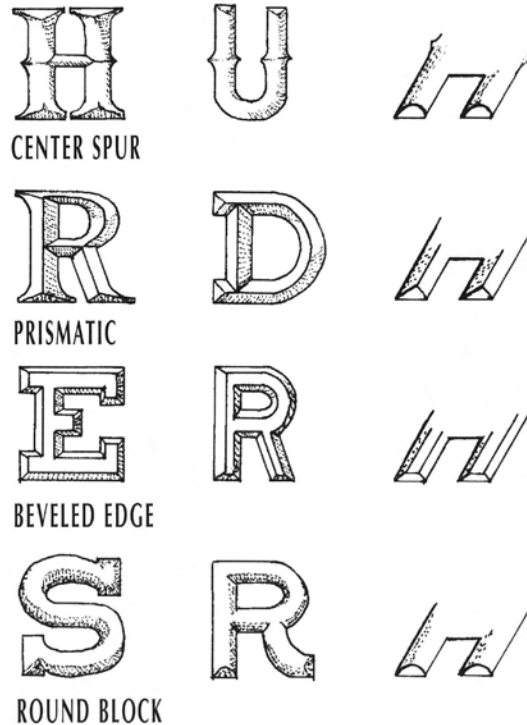
Raised letters were usually made of sawn wood with eased or rounded edges, but bronze and other



■ A modern raised letter sign of traditional design.

cast metal letters were used where permanence and low maintenance were desired. Raised letters, regardless of the material, are often gilded with genuine gold or aluminum leaf or painted with special imitation gold or silver metallic finishes to simulate the appearance of

FOUR COMMON STYLES OF RAISED LETTERS



bright, precious metals. Bronze letters were sometimes polished and lacquered to maintain a bright, golden finish.

Today, cast bronze letters are still available and are still considered to be a premium material. Also available are a variety of wooden, composition, and raised plastic letters that can be gilded or painted.

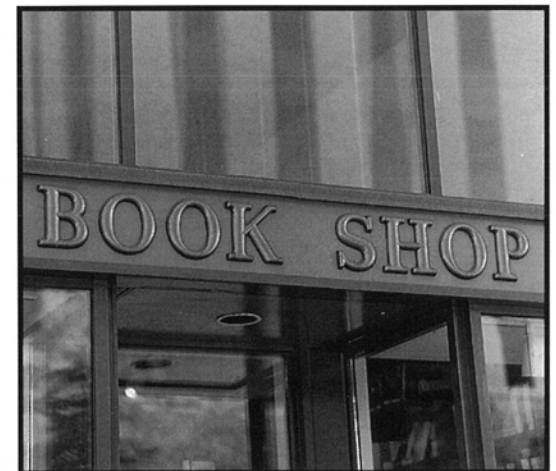
The edges of the letters were usually shaped or rounded, which added depth, shadow lines and visual interest to the sign. Four of the most common edge treatments are:

CENTER SPUR Gently rounded on all sides with a distinctive pointed node or spur on the outside of each vertical stroke.

PRISMATIC Sharply beveled on the face to a V-shaped profile.

BEVELED EDGE A flat-faced letter with a modest chamfered edge on all sides.

ROUND BLOCK Rounded or radiused surface that is half-round in profile.



■ Raised letter signage conveys an image of quality and permanence.

Raised letters for signs were usually conservative in design, and, as has been said, very ornate styles of lettering were avoided. In general, a basic serif lettering, such as “Roman” or its equivalent would be highly readable and historically appropriate for raised letter signage on most pre-1940 small commercial buildings. Keep in mind that raised letters require extra spacing compared with flat, painted letters in order to avoid a crowded appearance, which would make the sign difficult to read from a distance. Raised letters were also sometimes attached directly to the building, without a sign board backing, and this is still an accepted practice today.

The sign board background for both flat, painted letters and raised letters was usually very similar. When raised gilded letters were set on a signboard painted a rich, dark green, black, red or royal blue, the result was very striking and readable. Signboards that feature raised letters should generally be bordered with a rolled wooden or metal molding. A simple, pinstripe painted border was also a popular enhancing feature.

AWNING SIGNS

An awning sign is composed of stenciled or sewn-on canvas lettering that is attached to the edge flap or “skirting” of a fabric awning. Whether the awning is fully retracted or open, the information on the skirting remains visible. An awning sign was sometimes the primary form of storefront signage

used by a small business years ago, particularly when the design of the building did not permit the installation of a signboard above the display windows. An awning sign can also be an effective adjunct to display window lettering or to a projecting hanging sign. For example, the hanging signboard could feature the name of the business and the awning signage could



■ A typical early twentieth century awning sign augmented with signage painted on the display windows. (Photo: Milwaukee Public Library)

include the address of the building and a one- or two-word description of the products sold by the business.

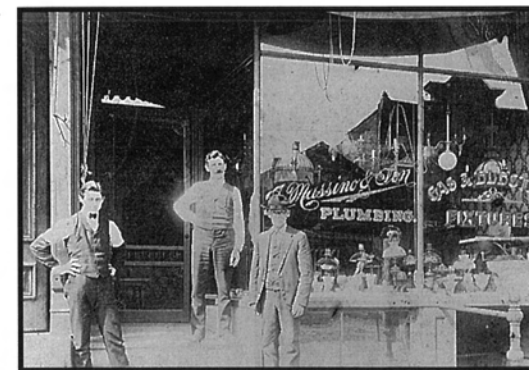
The lettering on an awning skirt is limited to a height of about 6 inches and is best executed in a very simple, bold, sans-serif style. In some cases, a large logo was sewn or stenciled on top of the awning that was visible when the awning was open. Awnings should never be made of shiny plastic materials. For a classy, traditional look, canvas-look acrylic or similar fabrics

should be used. See the Storefront chapter for additional information on awning construction and design.

DISPLAY WINDOW LETTERING

Another common type of storefront signage is lettering painted directly on the interior side of storefront display windows and glazed entry doors. Display window lettering was often the first choice for signage because it was at eye level, which is the ideal height when appealing to pedestrians. It was also used when the architectural design of the building did not include a space for a signboard. By the early 1920s, display window lettering was preferred by most merchants for primary storefront signage because it avoided the sign cluttered building facades associated with the then out-of-fashion Victorian era.

One of the distinctive features of signage painted on storefront display windows before about 1900 was arranging some of the words in a curve or



■ In the Victorian period, lettering on glass was a very popular type of signage. (Photo: Collection of Dr. Vaughn Simmons)



■ Painted lettering on glass can be a highly effective type of signage, whether it's contemporary in style or traditional.

arc. This design practice can be used today when a period style effect is desired for a storefront of pre-1905 design. During the early twentieth century, however, lettering set in straight lines was generally preferred for window signs, and curvilinear designs were generally avoided.

GLASS SIGNAGE

Flush-mounted sign panels made of sandblasted or acid-etched glass were up-scale alternatives to the more usual wooden or metal signboards installed above storefront display windows. Glass signage was in fashion from about 1890 through the 1930s. It was a very appealing and versatile medium that was easily adapted to the rapid changes in architectural styles and tastes that occurred during the early twentieth century. One of the outstanding attributes of an etched or sandblasted glass sign is that it can feature extensive ornament without obscuring the readability of the lettering.

When glass is exposed to sandblasting or etching chemicals, the smooth surface is eroded to a uniform, grainy-textured, snow-white appearance. Etched

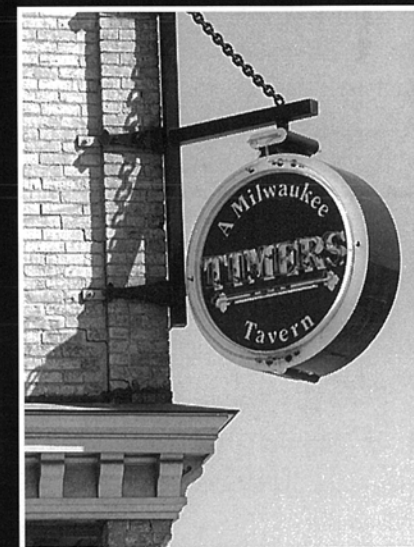
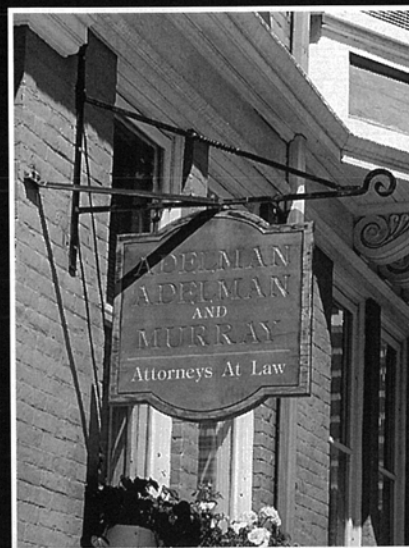
areas of glass were sometimes gilded with gold or silver leaf or painted with dark, rich enamels to further highlight the sign. At the turn-of-the-century, glass signs tended to be embellished with elaborate flourishes and other ornament that reflected the architectural tastes of the day. The signs were typically mounted on a painted wooden or metal backboard to enhance the readability of the lettering etched on the front. No historic examples of Victorian era glass signs survive in Milwaukee today.

Glass signs were made of clear or colored plate glass, and in the 1920s, '30s and '40s with opaque structural glass, such as Carrara and Vitrolite (see Glass chapter). Today, safety glass, which resists shattering, should always be used for signage instead of regular plate glass. Lettering etched or sandblasted into a



■ An etched, Art Deco style, Carrara glass sign from the 1920s.

HANGING SIGNS COME IN ALL SHAPES AND SIZES



sheet of polished, black glass, makes a dramatic, sleek-looking sign that is particularly appropriate for Art Deco and Art Moderne style storefronts of 1920 to 1950 vintage. A few structural glass, Art Deco style signs from this era still survive in Milwaukee.

HANGING SIGNS

A hanging sign is composed of a painted signboard attached to a metal bracket that projects from a building wall. Hanging signs were somewhat limited in popularity in Milwaukee, partially because the signs can obscure each other when too many are concentrated in one area. Hanging signs, for the most part, tended to be small and served as an adjunct to the principal, large, flat signboard or display window lettering.

Hanging signs were sometimes made in the likeness of objects or symbols associated with a particular type of business, such as a locksmith's keys, a loaf of bread for a baker, or golden balls for a pawnbroker.

The following guidelines should be kept in mind when planning a hanging sign:

1. The sign must, by local ordinance, be secured at both the top and bottom and must not swing freely. The bottom of the sign must be at least 10 feet above the sidewalk.
2. Hanging signs should not obscure the signage of other nearby businesses. In general, they should be fairly small.
3. Signs and brackets should be made and mounted to complement the architecture of the building and be

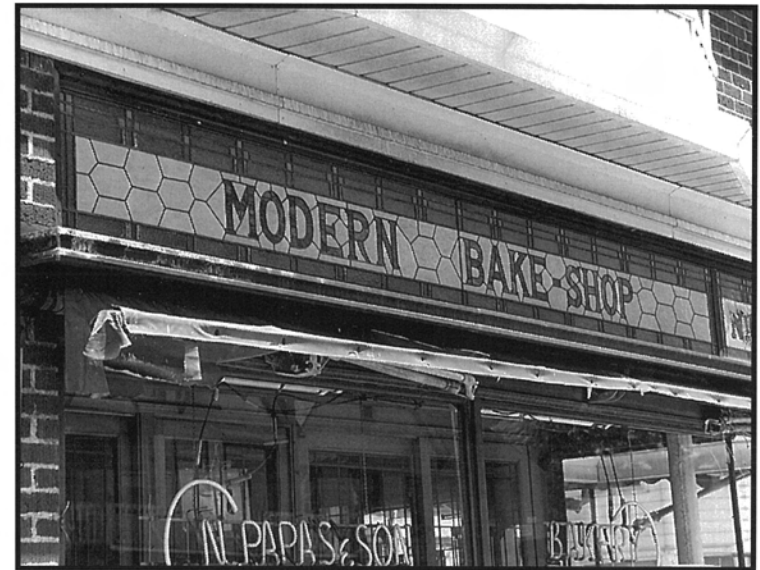
mounted so the fasteners go into the mortar joints on masonry building rather than into the face of the brick or stone.

4. The sign can be lit, if that is desired, with gooseneck incandescent fixtures or with small, inconspicuous spotlights mounted on the building that are aimed to shine on the sign at night.

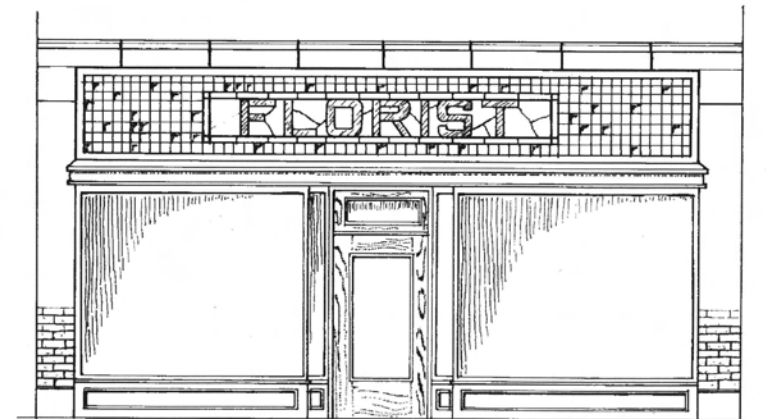
TRANSOM SIGNS

A transom sign is made of leaded glass letters that are built-in to the transom above a storefront display window or door. Leaded glass transom signs first became popular during the late 1880s, but probably did not reach the zenith of their popularity until the 1920s. A unique feature of a transom sign is that it can be illuminated at night by backlighting or simply from the glow of interior store lights.

Transom signs can still be made today by leaded glass craftworkers. Years ago, a transom sign was installed as a permanent, inseparable part of a building by a business that intended to remain in that location for a long period of time. This is probably not practical today because of the rapid turn over of tenants in



■ Leaded glass transom signs are unique and eye-catching, especially when backlit at night.



■ This drawing shows a typical storefront where the transom is used as a sign.

many commercial buildings, but a new transom sign can be made as an easy-to-remove panel which could be replaced when tenants change.

NEON SIGNAGE

Neon signs were not introduced until about 1926, but they rapidly became popular. During the late 1920s and 1930s, many new and old storefronts were fitted with neon signage. Neon, first discovered in 1898, is the name of a gas that can be sealed inside a glass tube and made to glow when a high voltage electrical current is passed through it.



■ Neon signs mounted in a window are eye-catching and appropriate for most types of commercial buildings.

The appeal of neon signage declined in the 1970s, but, with the recent revival of interest in traditional building products, neon sign-making is currently enjoying a renaissance. Neon was used for both interior and exterior signage years ago, but today new neon signs are mostly mounted on the interior side of display windows in place of lettering on glass. Neon is a dramatic advertising tool, and there are many competent neon sign artists who can create new signage that will complement an older storefront. Exterior

neon signs are most appropriate for use on post-1920s commercial buildings. Neon signage mounted inside display windows can be successfully adapted for use on all types of commercial structures.

CAST BRONZE TABLETS OR PLAQUES

Small, but visually distinctive signage can be provided by a solid bronze tablet or plaque. Most often bronze signage is placed at the eye level of pedestrians at the corner of a storefront or close to an entry door. Although bronze signage is often associated with banks, libraries and other institutions, it is also suitable for use on many types of small commercial structures. Bronze is an elegant, lifetime material that will not deteriorate. It needs no maintenance, although periodically the raised letters can be buffed to a gleaming shine and then sealed with lacquer to maintain a top appearance.

Because a bronze tablet is made in one monolithic piece, it is resistant to vandalism. Bronze tablets



■ Cast bronze plaques convey a dignified image.

should always be attached to a building with tamper-resistant screws. Bronze signs are affordable and are generally made to order by firms that specialize in that type of work.

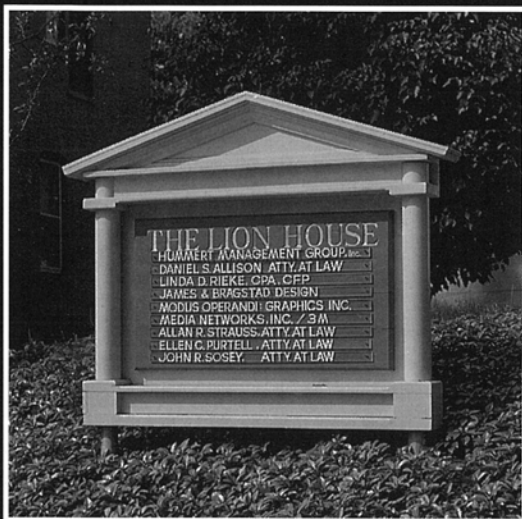
YARD SIGNS

Freestanding yard signage is often needed in situations where an old house, set behind a grassy lawn, is now being used for commercial purposes. Most yard signs appropriate for use with an older building are made of wood and feature either a painted signboard mounted on wooden posts, or a changeable message board that is set behind glass inside an ornamental wooden box frame. Freestanding, modern, plastic-faced metal box signs that are internally illuminated are generally not recommended. These signs are fine for a lawn installation near a modern building, but are usually not compatible with the architecture of an older building.

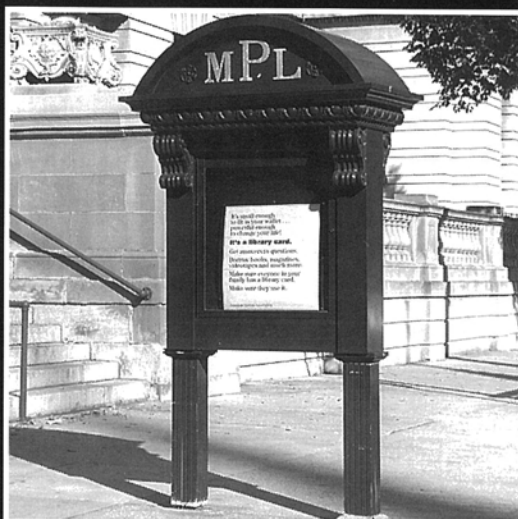
The simplest and least expensive yard sign for an older building is composed of a painted signboard mounted on one or two posts set in the ground. The post can be either round or square and capped with a small, ornamental finial. The signboard can be trimmed with moldings and lettered in the same manner as any traditional, flush-mounted signage described in this chapter.

Ornamental wooden box signs are recommended when a changeable message board is required. A wooden ornamental box sign is an excellent alternative to an unappealing, plain metal box sign because it can be designed to complement the architecture of the building it will be in front of. Wooden box signs

FOUR TYPES OF YARD SIGNS



■ A directory sign.



■ An announcement board.



■ A yard sign of traditional design.



■ A post-mounted hanging sign.

should always be made of high-quality lumber that is known to be decay resistant. (See the Wood chapter for more information on the selection of construction lumber.) Wooden box signs can also be trimmed with the stamped sheet metal ornament that is available from several manufacturers at reasonable prices if a more ornamental effect is required.

A yard sign can be economically illuminated at night by an exterior light source, such as a recessed “uplight” or “well fixture” that is concealed in the ground immediately below the signboard. A small, above ground, stake-mounted fixture that is focussed on the signboard is also acceptable, but not as desirable because it is more likely to be damaged and can detract from the appearance of the sign. Wooden box signs can be illuminated with an internal light source.

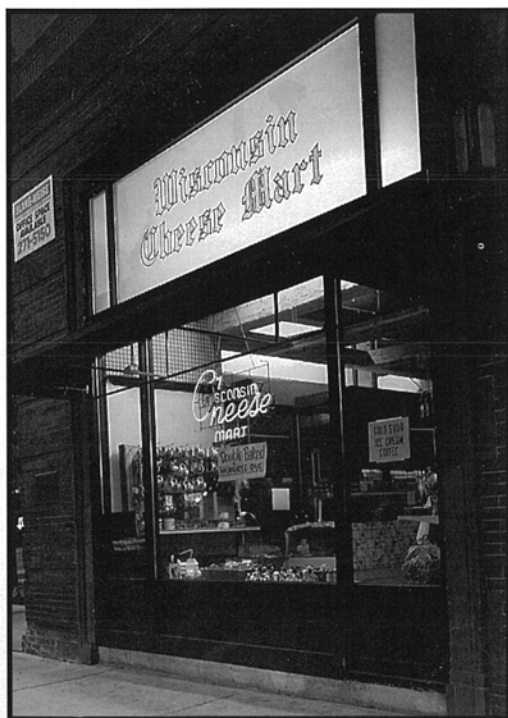
LIGHTING

The goal of any exterior storefront lighting project should be to highlight a building and its signage to the best possible advantage. Poorly designed storefront lighting can be avoided by keeping a few broad design guidelines in mind during the planning process.

Exterior lighting for small commercial buildings is typically dedicated to a specific purpose, such as the illumination of signage, accenting the facade of the building, or illuminating the entrance vestibule or shopfront window. The overall visual effect of any exterior lighting project depends to a great extent on two factors: the design and placement of the light fixture and the type of light bulb, more correctly called a “lamp,” that the fixture is designed to accommodate.

As a general rule, exterior light fixtures should be as inconspicuous as possible except for ornamental hanging fixtures, lanterns or sconces. The conduits or surface raceway that are sometimes necessary to supply power to exterior fixtures should not be visible to passersby on the street. Conduits that are visible should be painted to match the color of surrounding building materials. Plastic conduits are difficult to keep painted and should therefore be avoided.

Some of today's modern lamps, because of their shape and the color of light they emit, are better suited to enhance the architecture and signage of a fine,



■ A well-lighted storefront creates a positive image of a business even after closing time.

older storefront than other lamps. In fact, the illumination of some lamps can actually detract from the appearance of a building or sign at night.

The three major types of lamps are incandescent, fluorescent, and high intensity discharge. Although these lamps differ considerably in terms of service life and replacement cost, it is the quality of light emitted by a lamp that should be the foremost concern in choosing exterior lighting. The following table shows the overall compatibility of today's major types of lamps with common storefront lighting projects.

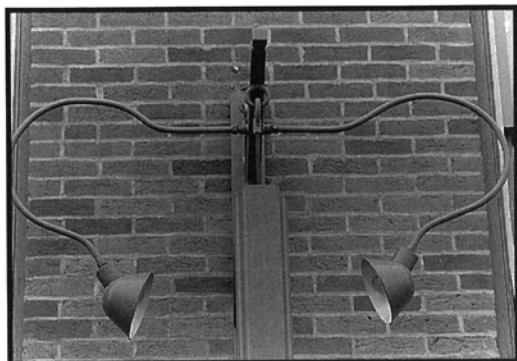
The common incandescent lamp is still the best overall choice for accurately illuminating colored surfaces, and it emits a pleasing light that is closest to approximating the warm glow of a candle. Incandescent lamps are highly recommended for illuminating small projecting signs and flat signboards mounted above storefront display windows. Signboards can be illuminated with the traditional gooseneck style light fixture that is composed of a projecting, curved pipe called a "conduit" that is fitted on the end with a lampholder and a round, pan-shaped metal shade. The gooseneck fixture has been used to illuminate signs for at least 90 years, and today it is still a stylish, efficient, and low cost method to illuminate a sign on an older storefront.

There are also many small, incandescent lighting fixtures suitable for highlighting or floodlighting the facade of a commercial building. The fixtures should be as small as possible to minimize their appearance and, preferably, hidden or obscured by some architectural element of the building. Avoid installing facade lighting where the fixture will be a

	Signage	Facade Floodlighting/Highlighting	Ornamental Shopfront Fixtures
Incandescents	yes	yes	yes
Fluorescents	yes	yes	no
High Intensity Discharge:			
Metal Halide	yes	yes	no
High Pressure Sodium	yes	yes	no
Low Pressure Sodium	no	no	no
Mercury Vapor	no	no	no

focus of attention and thereby detract from the character of the building. Remember, too, that bright floodlights may not flatter a small building and that smaller, less intense "accent lights" are usually better suited to enhance the architectural details of an older building at night.

The familiar fluorescent lamp, recognizable by its long, tubular shape, is more energy efficient than an incandescent lamp, but it is not a good choice for illuminating colors, particularly red, to the best advantage. Many fluorescent fixtures are large and boxy in design, and therefore have very limited uses in storefront illumination. However, there are some special, modern, exterior, architectural fluorescent fixtures designed specifically for facade lighting that are relatively small in profile and can also be used for lighting painted signboards and accenting architectural features. Fluorescent fixtures should not be installed beneath fixed awnings,



■ Gooseneck light fixtures are a traditional and attractive way to illuminate signage (above) or to provide general exterior lighting (below).

as is often now done, because the glowing awning, so commonly seen today on modern buildings, is not compatible with the architecture of older buildings.

Metal halide and high pressure sodium lamps are tops in terms of energy efficiency and are often used for floodlighting or architectural accenting purposes. Metal halide lamps offer good renditions of color and are popular for floodlighting very large facades. High pressure sodium lamps are slightly more energy efficient, but produce an unusual golden white light that may not be

appropriate in most situations, depending on the colors of the building materials that are to be illuminated.

Low pressure sodium lamps are not recommended for storefront lighting because colors illuminated by the light appear as drab tones of either gray or yellow. Mercury vapor lamps also produce light that distorts colors to unappealing blue-tinted hues.

WINDOW VALANCES

The display window valance has been nearly forgotten today, but it was once an important part of early twentieth century display window decor.

A valance is a curtain-like interior trimming installed at the top of a display window to conceal light fixtures and trim the window. As an adjunct or complement to storefront signage, the valance often featured the name of the business or its monogram centered in the panel.

Valances were made of a variety of materials including silk, velvet, silver metallic cloth, special fade-resistant woven fabrics and thin, painted boards. Many valances were trimmed at the bottom with a decorative fringe or tassels. The top of the glass in the display window was also sometimes painted in imitation of a fabric valance.

The display window valance was a stylistic innovation of the early

twentieth century, and it was particularly popular for trimming storefronts between 1915 and 1935. A valance was often not installed, however, if the storefront was fitted with an awning that would block the view of the window top and, thereby, the valance.

Installing a valance might be considered today as an economical and novel method of dressing up an early twentieth century storefront. Sign painters today can easily recreate a painted valance on the glass of a display window, and most drapery makers should have no trouble creating a fabric valance when supplied with an old photo or an accurate drawing of an original display window valance. ■



■ A store with window valances in the 1920s. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)

CORNICES





■ Too many buildings have had their cornices needlessly removed when they could have been repaired. The aluminum cladding, installed to cover the scars created when the cornice was removed, just calls attention to the fact that this building has lost an important architectural feature.

A cornice was an indispensable architectural feature of most commercial buildings constructed before 1930. Over the years, however, efforts to modernize older buildings often resulted in the needless removal of part or all of the cornice, leaving the structure looking stripped and incomplete. Many other cornices were insensitively altered in order to accommodate the large electric box signs that became popular after 1940. Of the surviving cornices, many need repair today simply because of their age and deferred maintenance. This chapter will discuss the options for repairing and replacing storefront cornices.

■ Preceding page: An elaborately shaped sheet metal cornice at 1112-14 W. Lincoln Avenue

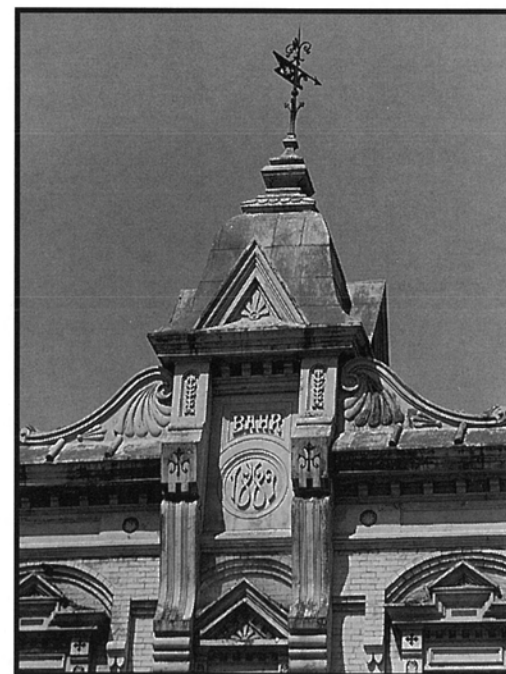
CORNICE CONSTRUCTION

In its simplest form, a cornice is a box- or shelf-like projection from a wall that is usually trimmed with moldings and ornamental brackets. A cornice serves a number of ornamental purposes, such as focusing attention on a particular portion of a building or to act as a transitional element between different parts of a building, for example, between the storefront and the upper stories.

The types of cornices found in the city range from large, highly ornamented rolled sheet metal compositions to the simple box-like projections found above the storefronts of many small, neighborhood commercial buildings. Although a projecting cornice

may serve a very practical function, such as sheltering a rolled-up awning above a shopfront window, most cornices are essentially ornamental in character and were usually intended to do little more than to ornament the top of a wall at the roofline. During the late nineteenth century, a cornice was often used to proclaim the name of the building's owner and its construction date. Today the cornice is again being recognized as an attention-getting detail that enhances customer recognition of a business and the visual appeal of a building.

Reconstructing a missing cornice is strongly encouraged. The best place to start such a project is with a historic photo of the building that shows what



■ Victorian cornices often incorporated the building's name and construction date, as does this one at 801-805 S. 2nd Street.

the cornice looked like originally. If an old photo is not available, let the existing cornices on other older buildings of similar style and vintage in the city be your guide to selecting an appropriate design. It is important to build a cornice that is in keeping with the overall style of your building. A cornice wildly out of character with your building is usually not worth the effort and money required to build it.

An older cornice is typically made of one or more of the following materials: sheet metal, wood, stone, cast stone, or terra cotta. Today, two new materials that have joined that list are glass fiber reinforced concrete (GFRC) and fiberglass reinforced plastic (FRP). Although traditional materials are still an excellent choice for the repair or reconstruction of a cornice, these

two new materials can be very practical and useful under certain circumstances for repair work or to construct a completely new cornice. In general, glass fiber reinforced concrete can approximate the appearance of the masonry units in stone and certain types of terra cotta cornices. Fiberglass reinforced plastic, on the other hand, is generally not recommended for stone cornice repair, but it can be used to make convincing replacement parts to repair or replicate a damaged or missing terra cotta, wood or metal cornice. The repair or replacement of a cornice is not as mysterious or difficult as it may seem, and the ultimate success of the project depends upon three main factors: (1) selecting the appropriate material; (2) the proper fabrication of the replacement pieces; and (3) a watertight installation on the building.

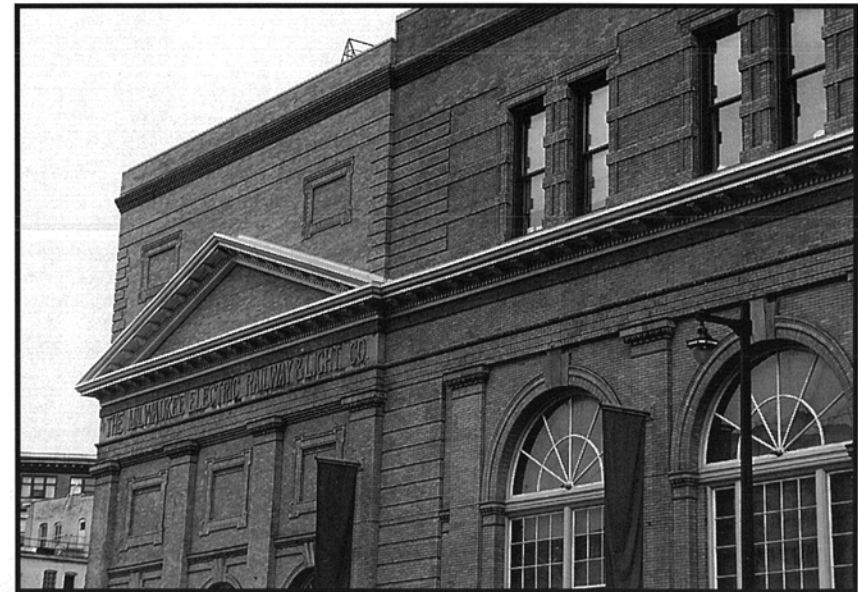
SHEET METAL

Although sheet metal has been used for cornice construction since the middle of the nineteenth century in Milwaukee, the material did not reach the zenith of its popularity until the mid-1880s, after which it remained the preferred material for cornice construction through the 1920s. Sheet metal could be quickly and economically fabricated with elaborate rolls and ornamental details that would be too costly or impractical to reproduce in masonry materials, such as stone or brick. To a great extent, this is still true today.

Because a metal cornice is relatively light in weight, it can project much farther from the face of a wall than a solid masonry cornice which would require

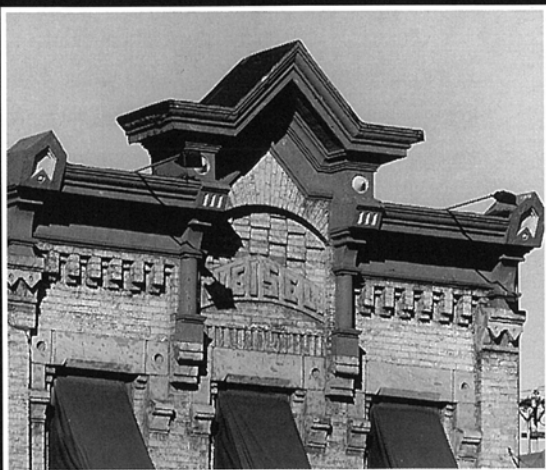


■ **BEFORE:** After its cornice was removed and the wall patched with a different type of brick in the 1950s, this building looked scarred and incomplete.



■ **AFTER:** The new metal reproduction cornice has restored the building's architectural integrity.

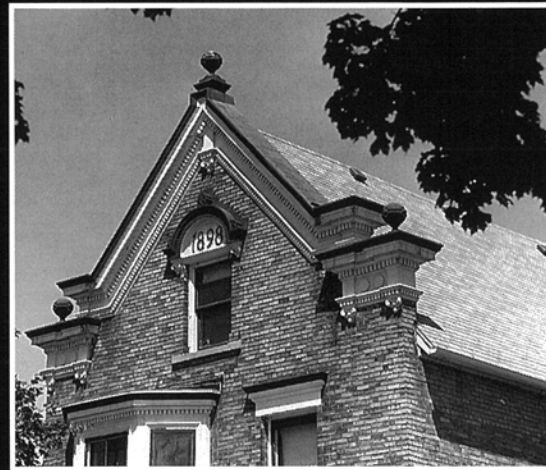
HISTORIC SHEET METAL CORNICES



■ An 1870s Victorian Gothic style cornice.



■ An 1880s Queen Anne style cornice.



■ An 1890s Classical Revival style cornice



■ An early 1900s Neoclassical style cornice.



■ An early 1900s German Renaissance Revival style stepped cornice.



■ A bold turn-of-the-century cornice in the Baroque Revival style.



■ Cornices are not just ornamental; they are also functional. The removal of part of this 1920s copper cornice and its replacement with aluminum siding not only looks unsightly, it has exposed the building to water damage from leaks at the crucial point where the roof meets the walls.

massive and costly hidden structural supports to make it safe. An older, damaged or deteriorated metal cornice should never be removed if it is at all possible to repair it. Far too many cornices have been destroyed when the money used to remove them and patch the



■ New reproduction sheet metal finials being made for an old building. (Photo courtesy of William Pietsch Co.)

wall surface could have been better spent on repair. Constructing a completely new sheet metal cornice to replace a missing one is a feasible, realistic project that can be done by local craftworkers. Despite a widely held opinion that “you can’t get that kind of work anymore,” there are many firms, including some local ones, that are capable of repairing an old cornice or fabricating and installing a new sheet metal cornice that would rival the craftsmanship of a century ago.

Galvanized steel is probably the most economical metal to use for new cornice construction today. Its only drawback is that it must be kept painted to protect it from corrosion. Other premium sheet metals that are very low in maintenance and highly resistant to corrosion include copper, stainless steel, tene coated stainless steel, and lead-coated copper. Copper and stainless steel can be painted to suit any decorating taste. Anodized (meaning dyed) aluminum is generally not recommended for cornice construction because it dents easily and does not hold up well under winter snow loads. Because labor is actually the most significant cost in the construction of a new cornice, using a premium quality sheet metal may not increase the cost of the total job as much as you might think. Whenever an existing cornice is patched, the new metal should be similar or compatible with the old material because corrosion can result when two dissimilar metals, such as copper and steel, come in contact with each other.

The methods of fabricating and installing a sheet metal cornice have changed little over the years. A sheet metal cornice is usually fabricated and completely assembled in a shop. It is then transported to the job site, carefully hoisted into place, and attached to the building by means of simple metal struts or angle irons that are imbedded in the mortar joints if it is a masonry structure. On a frame building, the struts are usually anchored to the wall studs. The process is simple and quick.

BRICK CORNICE WORK

Unlike metal cornices, which were fabricated in a shop and brought to the site, ornamental brick cornices were usually constructed piece by piece from standard brick at the job site. Brick cornices were typically made by a technique called “corbelling,” in

A sheet metal cornice is lightweight and requires little supporting structure.

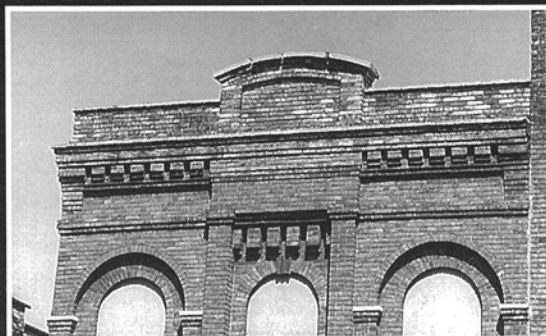


■ Left photo: The metal supports for a small metal cornice.



■ Right photo: The shop-fabricated cornice slips over the metal supports for a quick, easy installation.

HISTORIC BRICK CORNICES



■ An 1870s Italianate style cornice.



■ An 1870s Victorian Gothic style cornice



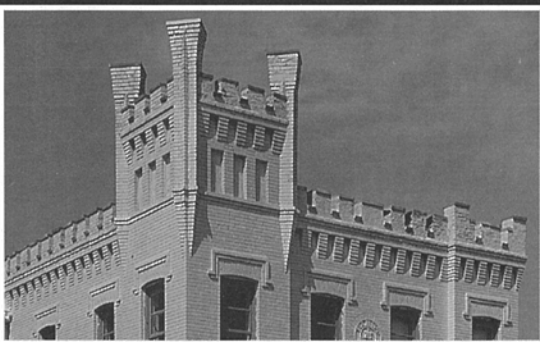
■ An 1880s Queen Anne style cornice.



■ A simple 1890s Queen Anne style cornice.



■ An 1890s Romanesque style cornice.



■ An 1890s Gothic style cornice.

which a series of projections is created by stepping rows of brick out over the rows beneath. Corbelled brick was often used for cornice work in combination with other materials, such as rolled sheet metal, dressed stone or wood. In some cases, specially molded brick shapes were used for cornice work, but that was relatively rare in Milwaukee.

Ornamental brick cornices are perhaps most closely associated with Victorian Gothic and Victorian Italianate commercial buildings of the late 1870s and early 1880s, but corbelled brick cornices remained popular for more modest buildings into the 1920s.

The most typical problems with old brick cornices are missing or deteriorated brick and eroded mortar joints. In repairing an existing brick cornice, it is particularly important that any replacement brick match the exact size, shape and color of the original brick because a cornice is a highly visible architectural element that will call unwanted attention to compromises in labor or materials. Deteriorated mortar joints should be repaired in the same manner as those on flat wall surfaces. See the brick and masonry chapter for proper repointing techniques and specifications.

WOOD

Elaborate wooden cornices were characteristic of all types of brick and frame commercial buildings before 1885 and remained popular for more modest commercial buildings until about 1900. Wood was generally avoided as a cornice material for masonry buildings in the city's downtown after 1885 because of a preference for more permanent materials and

because of fire code restrictions enacted in the 1890s that restricted the installation of wooden trim on the exteriors of commercial buildings.

Wooden cornices in the city ranged from simple, straightforward, boxlike projections trimmed with crown moldings to architectural extravaganzas featuring pediments, finials, extensive bracket work, wood turnings, paneling, and decorative carvings. It is important to carefully assess the condition of an older cornice before beginning work on it. Rehabilitating a cornice often requires relatively modest repairs to remedy common problems such as peeling paint and minor amounts of missing wooden trim. A wooden cornice should be disassembled and rebuilt only as a last resort. The most extensive cornice problems stem from water leaks that deteriorate the structural supports that hold the finished millwork in place.

Repairs to a wooden cornice will frequently involve the skills of both the carpenter and the sheet metal worker. A wooden cornice is usually capped with metal flashing in order to seal out water. If the flashing has deteriorated, as is often the case, substantial damage can occur to both the ornamental woodwork and the hidden framework that supports it.

Whenever a cornice is rebuilt or repaired, the original decorative moldings and millwork should be saved and repaired with quality wood epoxy consolidants and fillers to the extent feasible. Older decorative woodwork is usually very expensive to faithfully duplicate today, and it makes good economic sense to save the old trim whenever possible (see Wood chapter). By rebuilding the deteriorated framework of a wooden cornice with new lumber and then reattaching

HISTORIC WOODEN CORNICES



■ An 1860s Italianate style cornice.



■ An 1870s Italianate style cornice



■ A simple 1870s Victorian Gothic style cornice.



■ A bold 1880s Victorian Gothic style cornice



■ A modest 1880s Queen Anne style cornice.



■ A highly ornamental 1880s Queen Anne style cornice.

rehabilitated decorative millwork to it, a substantial cost saving can be realized while, at the same time, preserving the historic fabric of the building.

The wide range of stock and semi-custom wooden moldings that is available from many sources today makes it possible for a finish carpenter to duplicate many of the old wooden cornices that trim the city's commercial buildings. Because a cornice is subject to extensive exposure to the weather, it is advisable to select only quality construction wood that will resist decay and hold a painted finish (see Wood chapter for more information).

STONE

The permanence, low maintenance, and fine finished appearance of stone made it a desirable material for cornice construction on costly buildings throughout the nineteenth and early twentieth centuries. A stone cornice was particularly fashionable during the 1870s and early 1880s, and, again, during the early twentieth century.

Stone cornices are subject to three principal problems: (1) deterioration of the steel reinforcing bars, called "clamps," that were often used to tie the individual building blocks of the cornice to the building wall; (2) surface deterioration of the stone itself; and (3) erosion of the mortar joints. It is relatively easy to spot eroded mortar joints and simple surface deterioration, but rusting steel clamps between the blocks can go unnoticed for many years. If a steel clamp is allowed to corrode indefinitely, however, it can eventually expand in size as it rusts to the point where the stone it is attached to may crack or be pushed out of place.

It is important to understand, however, that not all stone cornices were built with steel reinforcing clamps. Most of the city's oldest stone cornices of 1870s and 1880s are held together primarily by the weight of the stones themselves and, to a lesser extent, by mortar. These cornices have generally held up very well over the years. When a serious problem with rusting steel clamps becomes evident, however, there is often little choice but to carefully dismantle the cornice and rebuild it using stainless steel clamps that are highly resistant to corrosion and should last indefinitely. The value and longevity of a fine, dressed stone cornice makes this work worthwhile and cost-effective, especially since stone cornices are more often found on large, costly buildings that justify the expense. The best protection against the rusting of stone clamps in the first place is to keep all the metal flashings around a cornice in top condition to prevent the intrusion of water into the masonry. Repointing deteriorated mortar joints also helps to seal out water. (See Masonry chapter).

Surface deterioration of building stone is generally more of a problem with the softer red, brown and tan sandstones than with the hard, local Milwaukee County limestone or Bedford limestone that were used in the city years ago. Because sandstone was relatively easy to carve and shape, however, it was often chosen for decorative cornice work and trim, even though it has always been known to be a poorly weathering material.

Severely deteriorated sandstone can be removed and replaced with new, matching sandstone or with substitute artificial cast "stones" made of the modern glass reinforced concrete (GFRC) that is

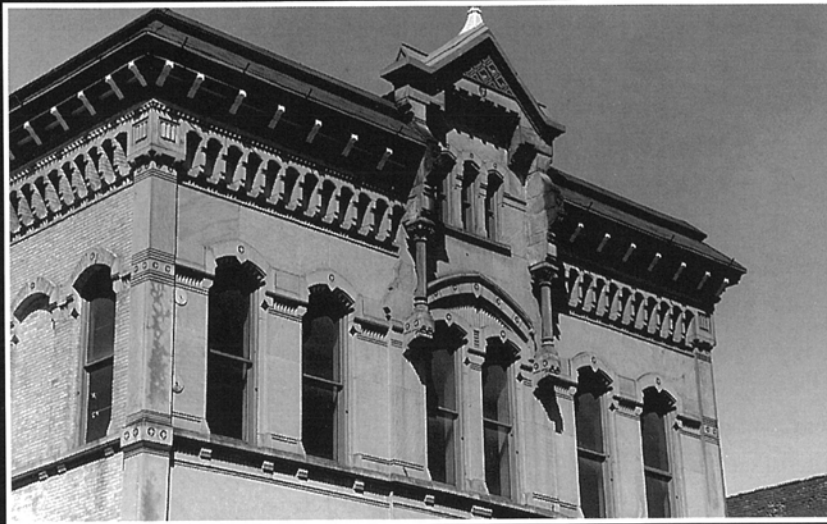
described later in this chapter. It is preferable, if at all practical, however, to stabilize and patch the original stone without removing it from the building. This can be done by using the new stone restoration consolidants and mortars that have appeared in the last 15 years. The deteriorated stone should first be treated with a liquid "consolidant" that will greatly retard the erosion process and restore strength to the remaining stone. Then modern "restoration mortars" that have been carefully blended to match the color and texture of the natural stone can be applied and tooled to the shape of the missing material. Restoration mortars can provide a permanent, nearly invisible patch that is typically more durable than the original sandstone. Restoration mortars are also a good choice for patching small holes and other minor defects in a stone cornice.

Repointing eroded mortar joints in a stone cornice is a straightforward job, but care should be taken to match the color and texture of the old mortar. It is not recommended to use urethane caulks or sealants to repoint the joints in a stone cornice.

CAST STONE

The owners of some commercial buildings are likely to encounter a cornice made of historic cast stone, which is almost indistinguishable from natural limestone when it is properly fabricated. Cast stone, which has been in use for hundreds of years, should not be confused with the modern, molded stone substitutes such as glass fiber reinforced concrete (GFRC) and fiberglass reinforced plastic (FRP). Cast stone was used sparingly at the end of the nineteenth

HISTORIC STONE CORNICES



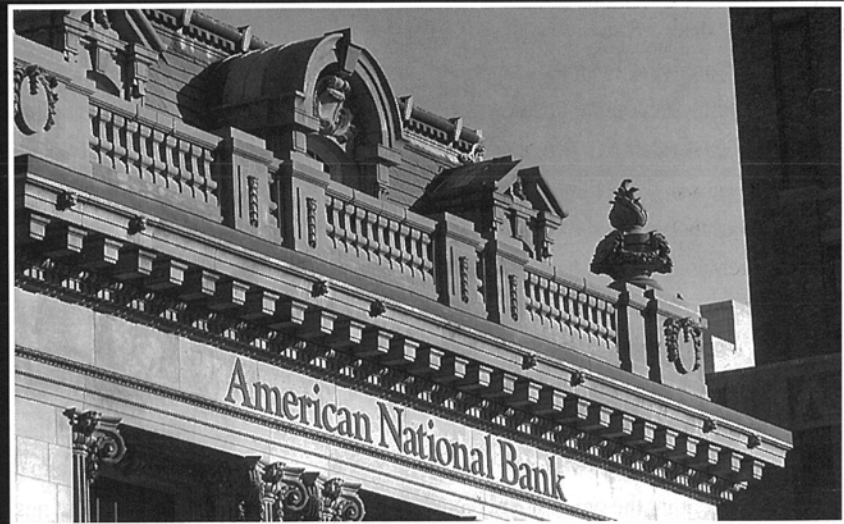
■ An 1870s Victorian Gothic style cornice.



■ An 1880s Queen Anne style cornice.



■ An 1880s Romanesque style cornice.



■ An early 1900s Neoclassical style cornice.

century in America, but it probably was most popular between about 1910 and 1950.

Cast stone is generally molded in large, heavy solid blocks, and it is installed just like traditional stonework. The principal advantage to cast stone is that it has the look of carved and dressed limestone without the expensive tooling costs associated with natural stone.

Cast stone is still made today. Missing or deteriorated cast stone should generally be repaired with new cast stone that is made to match. Cast stone is available in many stock shapes, and some firms may be able to recreate an entire cornice at a cost that is much less than the cost of purchasing and installing a new natural stone cornice.

TERRA COTTA

There is really no comparable substitute for a fine cornice made of terra cotta, since it is considered to be a premium architectural product. Terra cotta is one of the most enduring building materials known because of its resistance to deterioration from water, frost, acid rains, and air pollution. Many natural building stones cannot match the longevity and low maintenance of terra cotta, which has been known to survive for hundreds of years with little or no deterioration.

Terra cotta was used primarily for cornice construction and architectural ornament in Milwaukee between about 1880 and 1930. Nearly all of the nineteenth century terra cotta was red in color, but by the turn-of-the-century the process of making "polychrome" terra cotta was perfected. Some of the most popular hues of the day were white, buff, gray, brown,

and "old gold." The use of bright colors, such as black, gold, green, blue and red, in terra cotta ornament was a phenomenon of the 1920s.

Special restoration mortars (see Masonry chapter) can be used to spot repair small areas of damage to a terra cotta block. If one or more whole pieces is completely missing, however, it is generally preferable to have a new, matching terra cotta block made by a competent manufacturer. Do not assume that new, made-to-order terra cotta is beyond your budget. It is important to keep in mind that the most expensive part of the replacement process, which is fabricating the mold, is virtually the same regardless of whether the replacement piece is made in genuine terra cotta or a substitute material such as fiberglass reinforced plastic. The cost of installing genuine terra cotta, when figured over its very long service life, is actually relatively inexpensive when compared with many other building materials that do not last as long and may require more periodic maintenance.

It is also helpful to realize that years ago terra cotta manufacturers in the United States were relatively few in number, and that is still true today. When the popularity of architectural terra cotta peaked in the 1920s, there were only about 40 American companies producing the 140,000 tons of finished terra cotta manufactured annually. Today there is a much smaller, but growing, number of competent terra cotta manufacturers who can work with local craftspeople to deliver a quality replacement piece or an entire new cornice that will match the quality of old work. Good terra cotta work today also takes time to produce, partly because the clay

requires a long drying process, just as it did 70 years ago, and construction schedules will have to be adjusted to account for this inevitable fact.

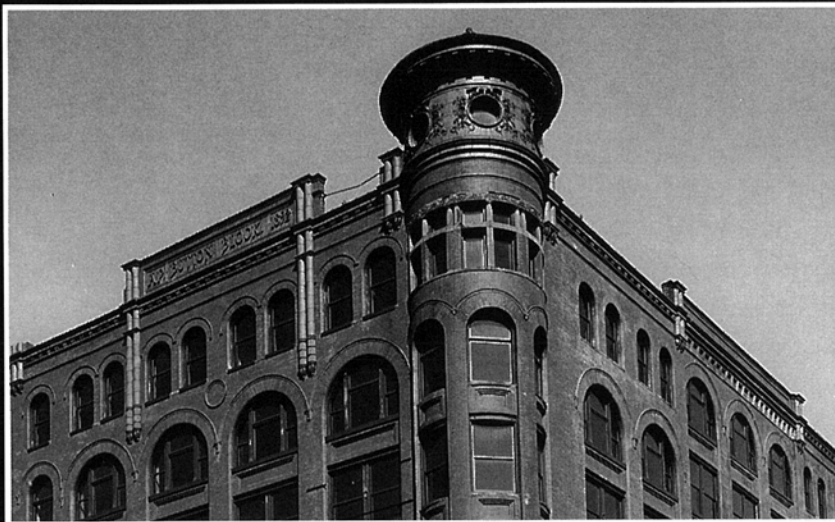
Replicating a piece of terra cotta often starts with the employ of a local ornamental plasterer, sculptor or model maker who can make an acceptable mold of the piece to be copied for the terra cotta manufacturer and then shipped back to the job site for installation by local masons. Good communication between all trades involved in the process is essential. Manufacturers can also work from precise drawings or an original piece of terra cotta that has been removed from the building and sent back to the factory.

GFRC

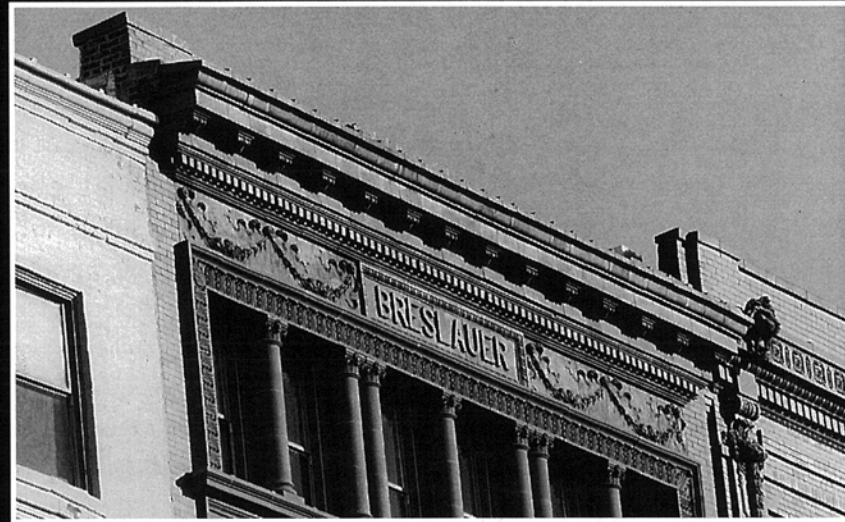
Glass fiber reinforced concrete (GFRC) is one of the newer substitute materials now being used to repair or reconstruct historic stone and certain types of terra cotta cornices. In simplified terms, GFRC is a mixture of cement, sand and fiberglass reinforcing threads that is poured into a carefully prepared mold. GFRC is surprisingly light in weight because it is cast in hollow pieces, and it can be fabricated to successfully match the color and surface texture of a wide variety of natural building stones. GFRC would be a good substitute material in those cases where it is impossible or impractical to locate an acceptable source of matching natural building stone to make replacement pieces.

GFRC would also be a good choice to replace a completely missing stone cornice. It should not be used to replicate a sheet metal, brick or wooden cornice. GFRC can convincingly duplicate the soft, flat

HISTORIC TERRA COTTA CORNICES



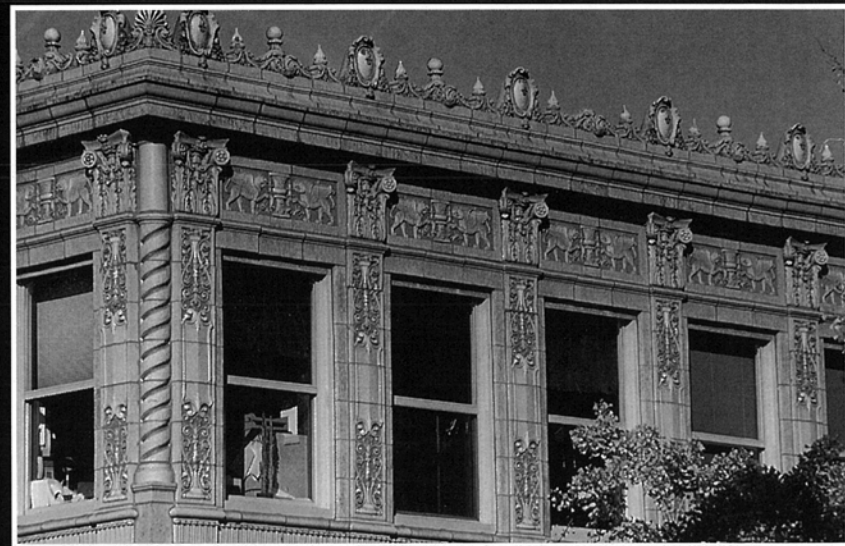
■ An 1890s Romanesque Revival style cornice.



■ An 1890s Neoclassical style cornice.



■ An early 1900s Sullivanesque style cornice.



■ A 1920s Mediterranean style cornice.

finish of the red and brown-colored terra cotta that was popular during the 1880s and 1890s, but not the shiny, glazed terra cotta that was often used on early twentieth century buildings.

One of the principal disadvantages of GFRC is that it shares the common tendency of most tinted cement products to fade over time from exposure to the elements. To ensure that the GFRC will be reasonably colorfast, only the highest quality pigments should be used to color the cement. The fading problems would be most apparent in the darker colors. GFRC is a relatively new product, and it is not really known how well it will hold up in the long run. Despite these concerns, GFRC is an acceptable material for the repair or replacement of historic stone cornice work.

FRP

Fiberglass reinforced plastic (FRP), which was introduced in the 1940s as a construction material for aircraft and boat hulls, has now been applied to a variety of structural and decorative uses

in architecture including cornice work for older buildings. In the hands of a skilled fabricator, FRP is an acceptable "substitute" material for completely reproducing a cornice or making replacement pieces to patch an existing stone or terra cotta cornice. The material is light in weight, strong, and water-resistant, but not fireproof. Because of these qualities, it is a good choice where the cornice was particularly massive or projected far out from the building, and a lightweight alternative to the original materials is desired for safety and structural reasons. The quality and price of the finished product can vary widely among fabricators. Most firms that make FRP cornices leave the final installation to a local contractor who simply hoists the finished cornice into place and fastens it to the building. It is very important to select a fabricator and installer who are both experienced in working with FRP.

In order to convincingly substitute as a repair or replacement material for a historic cornice, FRP must be carefully molded to duplicate the color, finish, texture and level of detail of the original material. All of

these factors should be thoroughly defined in the specifications section of a formal work contract.

It is particularly important that all FRP cornice work is constructed so that it can be securely attached to the building and made watertight. A cornice that leaks will result in costly damage to the structure of the building. Often a substantial part of replicating a cornice in FRP involves designing and fabricating the struts or flanges that will fasten the unit to the building. Because FRP is a plastic material that can yellow over time when exposed to sunlight, a special fade-resistant plastic finish must be used for the top coating layer that contains the color of the FRP piece.

FRP is a "factory made" product that can be shipped anywhere. It is particularly useful in regions where it is difficult to find skilled labor to build or repair a traditional cornice made of sheet metal, wood or terra cotta. This is not the case, however, in the Milwaukee area, where there is still a pool of talented labor that can work with nearly all types of traditional building materials. ■

WOODEN SIDING, TRIM, WINDOWS AND DOORS



WOODEN SIDING, TRIM, WINDOWS AND DOORS

Wood is a remarkable building material for which there is no convincing substitute. With the aid of modern restoration technology, it is no longer necessary to replace an entire door, window or piece of trim when only a small section of it is damaged or decayed. Too often, original wooden features are removed or replaced with modern substitutes made of vinyl, aluminum or steel that cannot match the versatility, aesthetic appearance, insulation quality and durability of the good quality wooden original. One of the goals of this book is to show how original wooden building elements can be preserved and why it is in an owner's best interest to do so.

THE BEST WOOD IS OFTEN OLD WOOD

Many of Milwaukee's pre-1920s small commercial buildings were constructed with a high quality white pine lumber that has no equal among today's common construction woods. White pine was used for nearly every part of some buildings including the framing, siding, doors, windows, interior woodwork, and roof shingles. Most of the white pine used in Milwaukee was cut from the virgin forests of northern Wisconsin, Michigan and Minnesota, which contained the largest and finest stands of white pine timber in the world until the trees were harvested to near extinction by the early 1920s.

The white pine tree was a majestic giant that grew to be as much as 200 feet tall over a 200- to 300-year period and yielded saw logs as large as five feet in diameter. The wood was remarkably free of knots, very

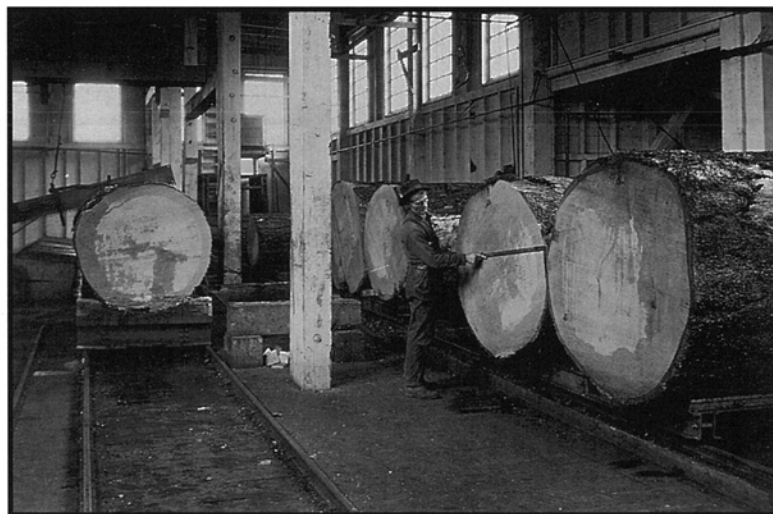
strong, resistant to decay, and held paint very well. The wood from such a mature, naturally-planted forest is called "old growth." Most construction professionals agree that old growth lumber lasts longer, holds paint better, and is more decay resistant than most of today's construction lumber, which is typically cut from small trees that are only about 50 years old. A building constructed of old growth lumber has a special, inherent value because of its irreplaceable wood. That fact should be taken into consideration whenever an older wooden structure is evaluated for its rehabilitation potential.

Other high-quality finish and trim lumber used in older commercial buildings came from cypress trees that grew in the southern U.S. and were typically 500 years old or more when they were harvested. Cypress, known years ago as the "wood eternal" because of its legendary quality to endure for centuries, was often used during the early twentieth century for storefront

trim around display windows and entry doors. Cypress is perhaps the most decay resistant softwood that has ever grown in North America and, as a result, was often installed in wet or moisture-prone locations on a building. Old-growth California redwood was another highly decay-resistant softwood that was also sometimes used where a very durable wood was desired. Old growth forests of redwood, cypress and white pine have reached near extinction, and it is doubtful that they will ever regenerate. Because of this, existing old-growth construction lumber is a valuable resource that should be preserved whenever possible. Even after 100 years of service, it is often still superior in quality to modern construction lumber.

It is important today for any contractor to have a good working knowledge of wood species so that he can select the best wood for the job. Pressure-treated lumber, which is very popular today, is an excellent

choice for structural members that will be subject to considerable exposure to moisture, but will not be seen. Treated lumber should generally not be used for highly visible finishing applications because the wood tends to shrink markedly as it ages and does not hold paint very well. Most of the untreated common pine lumber available today should be used only with considerable caution outdoors because it has a very low



■ White pine logs at a lumber mill in 1912. (Photo: Minnesota Historical Society).

■ Preceding page: A fine example of a wooden Victorian commercial building at 1136-38 W. Lincoln Avenue.

resistance to decay. At the very least, it must be thoroughly coated with a paintable wood preservative on all sides to improve its durability. Exotic imported hardwood lumber species, such as Jarrah and Ipe, are now beginning to be used, and they appear to offer very good resistance to decay outdoors and are rated about average at holding paint. These woods also have the advantage of not being subject to the extensive shrinking and checking typical of common pressure treated lumber.

REPAIRING WOOD WITH EPOXIES

Structural wood epoxy is one of the major advances in the rapidly emerging area of building technology aimed at preserving and restoring wood that is decayed or damaged. When used properly, wood epoxies often can permanently rejuvenate deteriorated old wood at a much lower cost than replacing it with new wood or an inappropriate modern substitute material, such as vinyl, steel or aluminum.

The most common use of epoxies is for the restoration of decorative wooden trim, windows and doors. Wood epoxy is a unique, space-age material that bonds permanently with wood while still allowing it to expand and contract with its natural, seasonal movements. Unlike other common fillers, such as caulking, glazing compound and auto body putty, epoxy will not shrink and crack or fall out of a patch. When it is dry, epoxy can be sanded, cut, drilled, carved and nailed like real wood. Some epoxies can be stained to match a natural wood finish, but the least visible repairs occur when the repaired wood is painted.

Wood epoxies are specially formulated in both viscous liquid and paste forms to tackle the common range of wood restoration problems. Liquid epoxies are designed to penetrate soft, decayed wood and consolidate it into a tough, durable mass. Paste epoxies are used to actually fill voids where the original wood has rotted away.

The partially rotted ends of beams and other damaged wooden structural members have also been successfully and economically mended in place with reinforced wood epoxies. In the past, a deteriorated beam had to be either completely replaced and have new wood sections scabbed-on or else be reinforced with metal plates, which is difficult and costly work.

WOOD REPAIR USING STRUCTURAL EPOXY COMPOUNDS



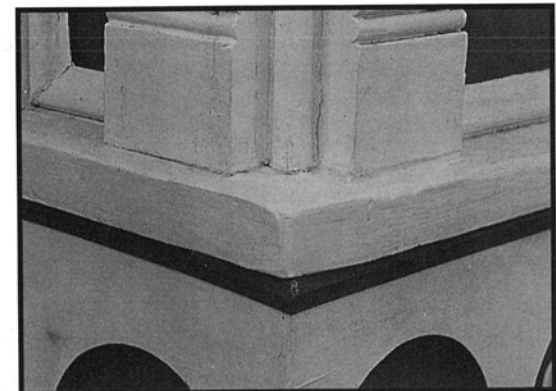
■ Rotted wooden sill in need of restoration.



■ Structural epoxy being applied to a rotted corner.



■ The damaged corner after shaping and finishing.



■ After painting, the repair is invisible.

WOODEN SIDING, TRIM, WINDOWS AND DOORS

Using structural epoxies can eliminate the need to remove parts of the building or extensively alter the structure in order to accommodate new reinforcements. The quality epoxies that have proven their effectiveness in the restoration and rehabilitation of commercial structures are not particularly cheap, but a small amount of the material goes a long way and it simply does not pay in the long run to use a lesser quality product. Remember, when you are tackling a major building repair project, you generally get what you pay for, so beware of low cost solutions to long term problems.

WOOD SIDING

Good quality wooden siding is still tops in terms of aesthetic appeal, durability and decorative possibilities when compared with modern siding materials made of vinyl, aluminum or steel. Remember that despite manufacturers' claims that aluminum and vinyl substitute sidings are maintenance free, every siding material eventually needs painting, cleaning and repair. Much of the city's older, high quality wooden siding is still in excellent condition, although it may be hidden beneath drab, modern substitute siding materials that need to be removed to restore the much sought-after historic character to older buildings.

Over the years, substitute sidings have proven to be "fad" products that quickly go out of style in

favor of the latest "no maintenance" cladding material. The asphalt sidings made to look like brick and stone and the asbestos tile sidings that were popular 40 to 60 years ago are now dingy and dated-looking and actually decrease the curb appeal of most buildings they clad. Steel siding, also very popular several decades ago, has been shown to rust over time and needs repainting. If the rust is extensive, there is little that



■ This handsome oriel at 1035-39 S. 5th Street illustrates how versatile wood is as a decorative material.

can be done to successfully restore its appearance and all of the siding must be replaced since it is nearly impossible to match the appearance of old steel siding. Aluminum siding, which was popular 15 years ago as a "miracle" siding material, is now one of the least used siding materials in America because it corrodes, dents, is a poor insulator, and requires repainting.

Vinyl siding, the current rage in substitute siding, has only been on the market for a comparatively short period of time, but has already been known to fade considerably, become brittle in cold weather, and require repainting in order to restore its factory-fresh appearance. Unfortunately, vinyl siding cannot be repainted with a color that is darker than the original, because that could result in severe and irreversible warping of the siding, especially on a southern exposure.

Advertisements for substitute sidings are also often misleading. For example, the claim that the color in vinyl siding "goes through every inch" gives the impression that the material is substantial in thickness when, in fact, most of it measures a scant 1/32 of an inch thick! Traditional wooden siding, by comparison, is nearly 16 times thicker than that at its bottom edge.

Beware of contractors' and manufacturers' claims that a building clad with substitute siding and trim looks the same as one sided with wood. In order to install substitute siding, it is usually necessary to

remove or cover the important wooden architectural details and trim that contribute so much to an older building's visual appeal. When substitute siding is installed in such a way as to preserve the old wooden trim, the labor costs of the project escalate and the joints between the substitute siding and the original wooden trim are difficult to make so that they don't

look awkward and don't leak. Poor joints between substitute siding and original wood trim can lead to troublesome decay-causing moisture problems.

Most substitute sidings are not repairable. Aluminum and steel siding dent easily, and the only remedy is the complete replacement of the damaged area, which is often very difficult to do because of the interlocking system that holds the siding sections together. Also, substitute sidings, because they are factory-coated and fade over time, cannot be spot-repaired without a noticeable difference in color between the old and the new material. Wood siding, on the other hand, can be easily and successfully spot-repaired. When the repaired area is painted, it will blend perfectly with the rest of the wall.

Other problems with vinyl siding include:

- Because siding trends come and go, manufacturers may not carry replacement parts for outdated siding.
- Vinyl can crack if it is accidentally struck in very cold weather.
- It melts quickly in the presence of a fire, giving off harmful fumes.
- Siding made by different manufacturers is usually not interchangeable.
- It is difficult to remove graffiti from vinyl and aluminum siding without painting the siding. The painted siding pieces won't match the rest of the vinyl or aluminum siding.

Do not make the mistake of installing metal or vinyl siding to cover moisture-related paint failure problems on wooden clapboards and trim. Artificial siding

will not solve a moisture problem, but merely hide it and the wooden wall will be doomed to extensive unseen rot that can continue unabated for years leading to irreversible damage and possible structural failure.

If you are determined to install vinyl or another substitute siding, despite its drawbacks, try to preserve as much of the original wooden trim as possible, especially the corner boards, trim around the windows and doors, eaves trim and water table. Also make sure the exposure of the original wood clapboards and the substitute siding match. Never install vinyl or aluminum siding with an imitation wood grain texture because it does not look like any known historic siding material used on the city's older buildings. Wood clapboard siding has a smooth surface and so should the vinyl or aluminum siding used to cover it. The contractor should use only a high quality caulk that will provide a lasting, reliable seal in the joints between the siding and the wooden trim. You should also be aware of the fact that the premium quality vinyl siding which manufacturers claim looks the most like real wood, actually costs about the same as installing new wooden siding.

Removing substitute siding and restoring the original wooden siding and trim hidden underneath is becoming a popular way to quickly and dramatically upgrade the appearance of an older wooden building. The modern siding can usually be removed with a minimum of labor, and the nail holes in the wood siding underneath can be patched with epoxy to provide a lasting, invisible repair. Old asphalt and slate-like cement asbestos tile substitute sidings probably contain asbestos, but removing them should present no

real problems as long as the contractor bags the waste and takes it to an approved landfill. Always check with the local health department for regulations regarding the removal of asbestos-containing materials.

In the rare cases where the original wooden siding is deteriorated beyond repair, it is recommended to remove the old siding and replace it with new, matching wooden siding. It may be advisable to install one of the new factory primed and painted real wood sidings that typically carry up to a 10-year warranty against the paint peeling. Because the siding is never exposed to the weather before painting and the coating is done by special machines in a factory-controlled environment, the longevity of the finish on the factory finished wood siding is comparable to most of the modern substitute siding products that often need repainting after 15 years anyway.

Only clear, knot-free siding should be used because it will hold paint better over the years. Rustic, knotty, rough-sawn wood siding is not appropriate for the city's older frame commercial buildings because they were designed to have smooth narrow clapboards that presented a very finished look. Cedar is the most common type of wood siding available today and will probably be the material of choice for most rehabilitation projects. High quality white pine siding, which has been known to last 200 years or more, is again being manufactured and is recommended for use where a lasting, quality new siding material is desirable, such as on a storefront. Like cedar, white pine is available with a factory painted finish. Compared with today's cedar siding, white pine is much harder, stronger and heavier, but also more expensive.

WOODEN SIDING, TRIM, WINDOWS AND DOORS

When paint on older siding and trim begins to peel, it does not necessarily mean that the wood is not worth saving. Actually, when too many paint layers build up on a wood surface over the years, the finish may fail because it can no longer expand and contract with the normal seasonal movements of the wood. Technically, a primer coat of paint should be applied between every two or three finish coats of paint to give the finish more elasticity.

Peeling paint could also be a sign of serious moisture problems. Check all gutters and downspouts to make sure that they are in proper working order. Leaky gutters can spill water against the side of a building, which will contribute to the rapid deterioration of the paint and the siding. Water spilling behind substitute siding from leaking built-in gutters usually results in unseen rot in the wall behind the siding.

High humidity within the building from kitchens or other sources may also cause exterior paints to fail. Water vapor has a tendency to naturally migrate through walls toward cooler outside air. Interior fans that are ducted to the exterior can help eliminate paint failure due to high humidity.

New wooden siding or old siding that has been stripped of paint should never be allowed to weather very long before it is painted, because that will increase the likelihood that the paint will prematurely peel. Any bare wood siding, old or new, that has weathered should first be coated with a good quality, paintable wood preservative before priming and painting. The preservative will restore some of the supple surface qualities that are removed by the weathering process and increase the longevity of the paint job.

WOODEN WINDOWS

This section deals primarily with the operable windows found on the upper stories of commercial buildings. Display windows are discussed in the Storefronts chapter. Many wooden window units are in remarkably good condition after 100 years or more of service. It is doubtful that many of today's window units made of materials such as vinyl and aluminum will match this record of longevity. Wood is easily repairable, easily paintable, long lasting, and can resist the acid pollutants in the air today that can corrode and pit aluminum.



■ Commercial wooden windows, such as these 120-year-old units, were made to last. They should be repaired and retained if at all possible. They can be made more energy efficient by adding either interior or exterior storm windows.

Knowing a few basic facts about window construction can help in making informed decisions about window repair. The movable frames that hold the glass are called "sash," and the wooden channels that the sash slide up and down in are called jambs. The bottom, horizontal member of a jamb is called a sill. A window unit consisting of a top and bottom sash that slide up and down in wooden channels is called a double-hung window. It is the most common window type and is often found on the upper floors and on the sides and rear of small commercial buildings of pre-1940 vintage.

Most older double-hung windows are fitted with a weight and pulley counterbalancing system that makes it easy to move a sash up and down and hold it open in place. A large iron weight, carefully sized according to the weight of the sash, is located in a small, hidden pocket on both sides of the window jamb. The weight is attached to one end of a rope or chain that is threaded through a pulley at the top of the window frame with the other end attached to the movable window sash. The weight and pulley counterbalancing system is not out of date or old-fashioned. In fact, it is a easily repairable and lasts indefinitely. Compared with other modern counterbalancing systems, it is one of the best because it requires the least effort to open and close a window. Too often a malfunctioning weight and pulley system that needs only minor, and relatively inexpensive repair, such as fixing a broken sash rope, is used as an excuse to replace an entire window unit at a cost of hundreds of dollars. Many sash windows, such as those that have simply been painted shut need only minor repairs to make them fully functional. Today's new counterbalancing systems that are

composed of metal guide tracks that hold a sash in place by friction or by metal springs will lose their tension over the years and are generally not repairable; ordinarily they must be completely replaced.

Deterioration of older windows is commonly restricted to the bottom-most part of the unit which tends to catch the most snow and standing water. Decay, peeling paint, and unsightly deep fissures in the wood, called "checking," are common in window sills and lower sash rails. Modern epoxies can permanently repair the window unit at a fraction of the cost of total replacement. Wood epoxies have been extensively field-tested and proven in large commercial rehabilitation projects as a cost-effective means to return deteriorated wooden windows to a usable, attractive condition.

While it may be preferable to restore an existing double-hung window unit and its weight and pulley counterbalancing system, it is also acceptable to have new, made-to-order wooden sash and modern metal guide tracks installed within the framework of an existing, original wooden window unit. The wooden window jamb and its exterior moldings should always be left intact and not clad with a sheet metal covering, as is often done. Never should the size of the window opening be reduced in order to accommodate a smaller, standard size window unit. Sash custom made to fit an opening are not as expensive as one might think and do not involve the extensive and expensive carpentry and new interior plastering and wood trim work that is often necessary when a window unit is blocked down to accommodate a smaller stock-sized window.

If an entire original window unit must be removed from the building, the new one should match

the original at least in terms of size and configuration of window panes. For example, do not attempt to "Colonialize" a building by adding multi-paned window units to a structure that never had them in the first place. Always keep in mind that the complete replacement of a window unit is costly and can consume a large part of any rehabilitation budget, while the return in terms of energy efficiency might not be that great. Replacement of old, wooden windows with modern metal, vinyl or even wooden units is a "big ticket" expense that is not justified unless the original windows are already missing or damaged beyond repair, which is seldom the case.

Modern aluminum or vinyl replacement windows may seem desirable at first because they do not require painting and are relatively low in initial maintenance. From an energy standpoint, however, aluminum is a very poor insulator and will actually conduct heat away from the building. When the original window openings have unusually shaped pointed or arched tops, it can be difficult and costly, if not impossible, to duplicate them in metal or vinyl. Restoration of the old wooden windows is often the most cost effective, permanent solution.

WINDOWS AND ENERGY EFFICIENCY

Many wooden window units have been needlessly removed in an effort to achieve an increase in energy efficiency that could have been accomplished at a lesser cost by restoring the old wooden windows. The energy efficiency of most older double-hung windows can be improved simply by a

general rehabilitation that might include replacing missing putty around the glass, repairing the sash lock that draws the two sash together in the center of the window unit, adding weatherstripping, and installing good quality storm windows.

For most commercial buildings, installing an exterior storm window is a good way to double the energy efficiency of a common wooden double-hung window. Storm windows should preferably be made of wood, although painted aluminum storms are also acceptable. Never install natural, unfinished aluminum storms because the bare metal looks out of character on older buildings, and will pit and corrode from exposure to atmospheric pollutants. Although metal storms are often ordered with a factory-applied color, it is also possible to paint the storm window frame an appropriate color at the job site. Generally speaking, a storm on an older building should be painted a dark color in order to create the impression that the window is receding into



■ A traditional wooden storm window is both attractive and energy efficient.

the facade. This was a simple design effect that was preferred by builders and architects years ago, and it can be used today to help recreate a period appearance.

Installing a new interior storm window is recommended when preserving the appearance of a double-hung window from the exterior is important. Interior storms are made of a sheet of clear plastic or sometimes glass set in a thin frame that attaches to the interior molding or window jamb. When clear plastic is used, it is always advisable to select a scratch-resistant surface such as MargardR because most other common plastic glazing materials will scratch easily from repeated cleaning (see Glass chapter). Interior storms are very practical because each is custom-fitted to the window and is very easy to install, remove and maintain.

Another way to boost the energy efficiency of an older window unit if no muntins exist is to retrofit the sash with modern insulating glass. Insulating glass is composed of two sheets of glass with a small sealed air space of about 1/4 of an inch between them. (See Glass chapter for more information.) A restored wooden window unit that is fitted with insulating glass and a storm window will probably meet or exceed the energy efficiency of just about any modern replacement window unit.

STOREFRONTS DOORS

Storefront doors in years past were often conceived as architectural focal points. During the nineteenth century, most storefronts were fitted with a pair of symmetrical, “double leaf” doors that were glazed with large sheets of plain or beveled plate glass.

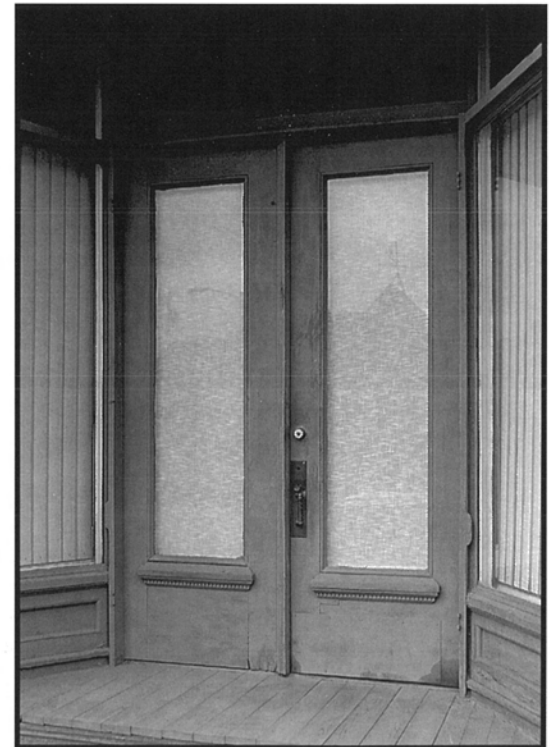
The bottom, paneled part of the doors was often trimmed with ornate millwork. Around the turn-of-the-century, the popularity of double leaf doors gave way to large, wide, single leaf storefront doors.

Preserving an older, original wooden storefront door is usually a much more economical choice than replacing it with a modern metal door or a new wooden door of inappropriate design. Despite exposure to the weather and continuous use over the years, older wooden storefront doors were strong, well-made, and often show little more than cosmetic damage, such as peeling paint, scratches, gouges and scars from changes in hardware. The basic structural integrity of an older door is usually found to be intact. Quality wood epoxies can work miracles in filling holes, consolidating decay and returning an older door to a like-new appearance at a reasonable cost. On the other hand, having a new door of appropriate design made can be very costly.

Doors that have a thick, unsightly accumulation of paint and varnish should first be stripped to bare wood by chemical or heat removal methods. Epoxies, incidentally, should always be placed over clean, unfinished wood surfaces for best results. A door can be stripped in place by hand or removed and taken to a firm that specializes in paint removal. Chemical strippers should always be sprayed or brushed on; it is not recommended to completely immerse a wood door in a vat of liquid stripper because that method can harm a door by loosening glue joints and causing the veneers on the surface of the door to delaminate.

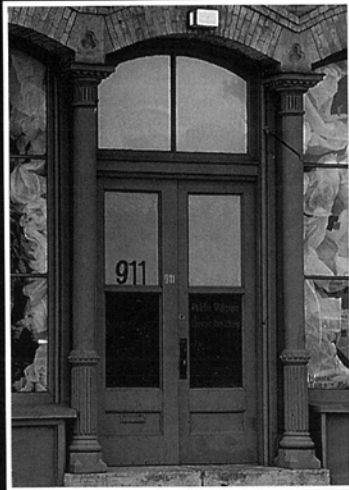
Many good, restorable, wooden storefront doors have been needlessly replaced with modern anodized aluminum doors. Anodized simply means that the metal

has been colored at the factory by a special dye process. Modern metal replacement doors generally cannot duplicate the fine finished appearance of many of the older wooden paneled doors they replace. Even if a metal door looks reasonably close in appearance to a wooden one, its factory finish will soon scratch or fade, and it must be repainted just like any wooden door. Sidewalk salts that splash against a metal door in winter can cause corrosion and accelerated deterioration of the finish. Dents in a metal door are also generally permanent and cannot be repaired like those on a wooden door.



■ Although this storefront door is in poor condition, it can be easily restored, probably for less than it would cost to replace it.

STOREFRONT DOORS



■ Italianate style commercial doors (1855-1880).



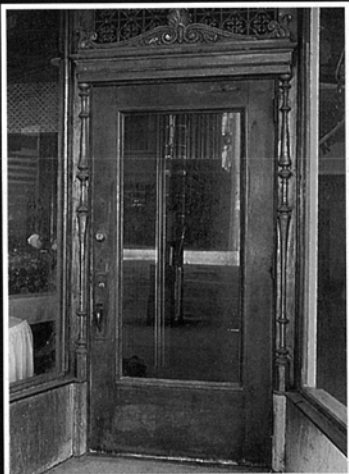
■ Victorian Gothic style doors (1870-1885).



■ Typical turn-of-the-century double-leaf commercial doors (1895-1915).



■ A half-glazed Late Victorian style door (1890-1905).



■ An early 20th century fully glazed door (1910-1935).



■ A 1920's Mediterranean style, fully glazed door.



■ A pair of modern doors of traditional design.



■ A fully glazed, modern door of traditional design.

HARDWARE

Tarnish and layers of paint and dirt often hide the original bright golden glow of the fine bronze and brass hardware that trims many storefront doors. If a piece of hardware does not attract a magnet, it is probably made of brass or bronze and can be successfully polished to a rich, like new condition that often cannot be matched by today's standard door hardware.

"Lockset" is the term used to describe the door knobs or pulls, the decorative face plates, called "escutcheons," on which door knobs are mounted, and the locking mechanism that is usually contained within a pocket cut into the edge of the door. Most older locksets that don't work properly can be repaired at a reasonable cost by a locksmith, unlike many modern locksets that are impractical and uneconomical to fix.

Older door hardware that attracts a magnet is made of steel or iron which, over the years, can corrode. This hardware, too, may be worth retaining and can be successfully rehabilitated by having the rust removed chemically and then priming and painting the metal an appropriate color such as dark bottle green or black. ■

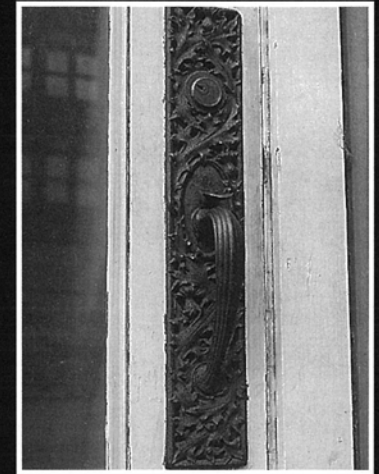
TRADITIONAL COMMERCIAL DOOR HARDWARE WAS MADE TO BE BEAUTIFUL AND DURABLE



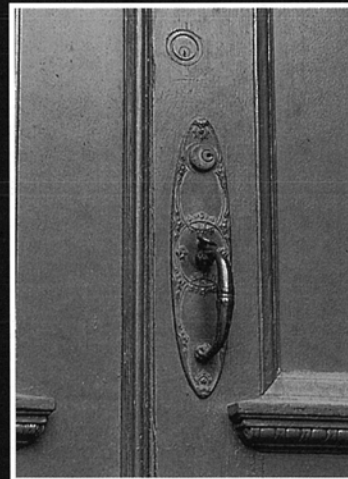
■ An 1870s Victorian Gothic style door pull.



■ An 1880s Queen Anne style door pull.



■ An 1890s Romanesque style door pull.



■ A late 1890s-early 1900s Edwardian style door pull.



■ An early 1900s Neoclassical style door pull.



■ A 1920s Colonial style door pull.

MASONRY



Masonry is found on nearly all older commercial buildings. From modest frame store buildings that rest on sturdy brick basements to fine, brick-clad commercial blocks trimmed with decorative terra cotta and stone, masonry is prized for its durability and longevity. This durability is often taken for granted. No building material, not even brick or stone, is completely maintenance free. Over the years, some masonry repair will be necessary in order to keep the appearance and structural integrity of a building in top form.

Two of the most common masonry repair and maintenance projects are cleaning brick or stone and tuckpointing. Tuckpointing is the process of removing deteriorated mortar from the joints and refilling them with new, matching mortar. Other masonry repair projects include the stabilization and reconstruction of foundations and the repair or replacement of stone, terra cotta, and stucco.

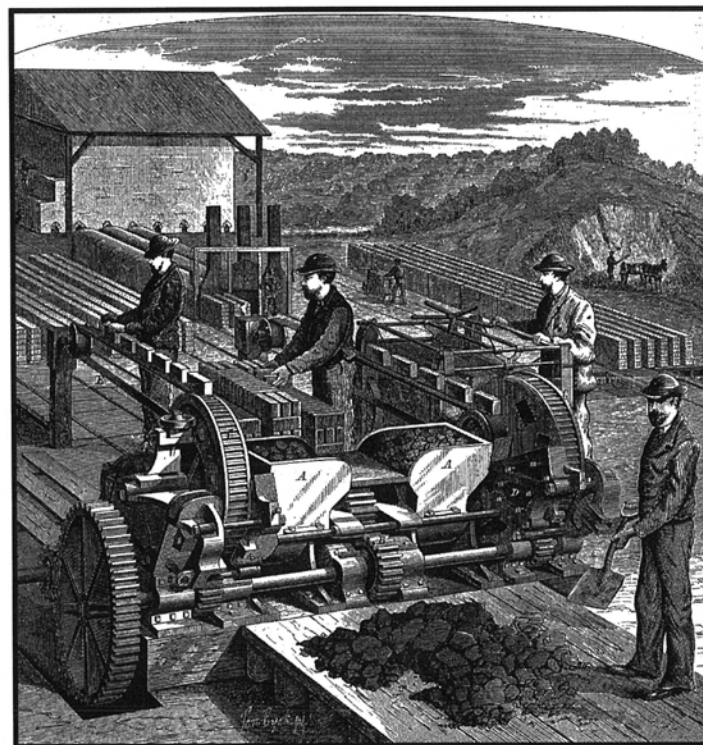
When contracting for masonry repair, it is vital that the owner and the contractor have a written agreement containing precise work specifications that are sensitive to the preservation of both the masonry and the building's visual character. The lack of a good job plan or the use of improper work methods could result in irreparable damage to the existing masonry and other building materials. A modest amount of foresight and planning can eliminate costly mistakes that can be as permanent as the masonry material itself.

■ Preceding page: A detail of the entrance to the Bertelson Building, 2101-11 N. Prospect Avenue.

BRICK

Milwaukee's native cream brick is one of its most important architectural assets. Many of the city's small commercial buildings constructed before 1900 are clad with locally-made cream brick, which is renowned for its unique golden yellow color. Although most clay soils produce red, pink or brown colored brick, when Milwaukee's native brown and bluish-colored clay was fired in a kiln, the result was a remarkable cream-colored brick that became famous across America during the late nineteenth century. By the 1850s Milwaukee was nicknamed the "Cream City" in honor of its many cream brick stores, houses, factories, and churches.

Cream brick, which has not been made since the 1920s, is a very valuable and unique architectural product that should be carefully preserved. Today the inherent beauty of cream brick is often hidden by the accumulation of grime and paint, but proper restoration techniques can sensitively reclaim the soft, golden glow of the city's famous brick. After 1900, an increasing amount of red and brown brick imported from other parts of the country was used in the city. Most of the commercial buildings built in Milwaukee in the early twentieth century are constructed of this hard, imported, pressed brick rather than the soft, native cream brick.

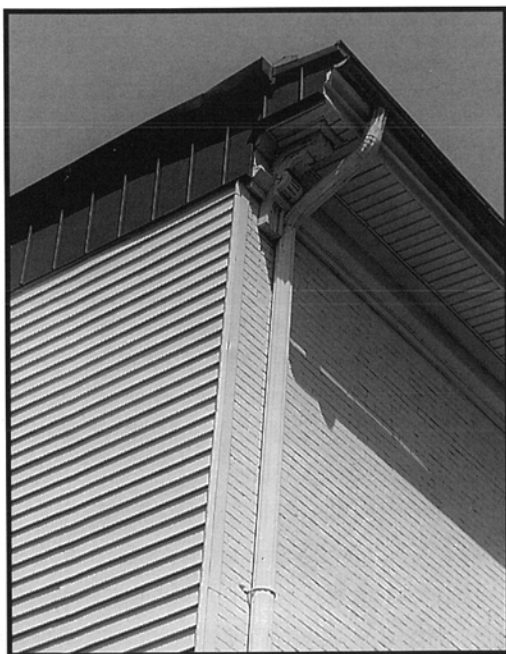


■ This 1870s engraving of the brick-making process shows clay being excavated from a hillside and loaded into a horse-drawn wagon. Clay, water and some other minor ingredients were then shoveled into the brick making machine which mixed and formed the clay into brick shapes. Before being fired in a brick kiln, the so-called "green" brick were allowed to air dry in the sun in long rows. In the background, workers are shown building a kiln to fire the air-dried brick.

Brick should never be covered with metal, vinyl or other substitute siding products. Beware of claims that substitute siding is lower in maintenance than brick or that a siding job will eliminate the need to repair loose brick and deteriorated mortar joints. Substitute siding drastically alters the appearance of a brick building and, when selling time comes around, increases prospective purchasers' concerns that serious

problems have been covered up rather than fixed. Typically, a well-maintained brick-clad building commands a premium sales price compared with an otherwise similar structure that has been sided. Insurance rates for brick buildings may also be lower.

If, in fact, siding is applied over loose or unstable masonry to cover-up a masonry problem, there is the danger that, at some point, both the siding and the brick beneath it could actually fall off the building without warning and cause serious personal injury, property damage, or both. The occasional repair and cleaning that might be necessary to maintain a brick wall in top condition will cost less in the long run than



■ Covering brick with siding, as has been done here, is never a good idea.

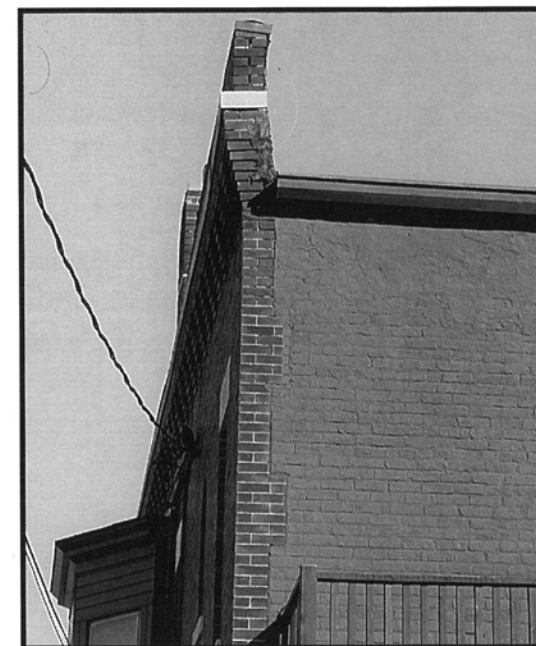
the cost of installing any substitute siding material. Seldom is brick deteriorated to the point where it cannot be successfully and cost-effectively repaired.

In some cases it may be necessary to dismantle and then rebuild part of a masonry wall using the original brick or stone, although this is actually very rare. A parapet wall, which is a low wall that projects above the roofline of a building, may sometimes need to be rebuilt if it starts to lean noticeably as a result of prolonged water penetration from faulty copings or flashings. Whenever a masonry wall is repaired, it is vital to first identify and eliminate the cause of the deterioration in order to avoid having to do the job over again several years later. The specifications described in this chapter for mixing and coloring mortar and tooling the mortar joints should be consulted whenever a masonry wall on an older structure is rebuilt.

TUCKPOINTING

Tuckpointing, also called repointing, is the process of removing deteriorated mortar from the joints between masonry units to a depth of about 3/4 to 1 inch and then repacking the joints with fresh, matching mortar. Mortar bonds masonry units together, seals out the weather, and also serves as a filler that compensates for small differences in the size of the masonry units to create an even, uniform wall. Mortar is very durable, but its outer surface can slowly erode over the years from exposure to water, as well as the forces of the sun and wind.

It is extremely unlikely that mortar joints will erode uniformly across the face of any masonry wall



■ This buckling parapet wall will need to be dismantled down to the roofline and rebuilt using the salvaged brick.

with the result that usually only certain areas require repair work. Tuckpointing an entire wall almost always results in needless extra expense. If you are also planning to clean the brick, it is always advisable to wait until that work has been completed before beginning a repointing project.

A successful tuckpointing job requires an experienced contractor who pays careful attention to five major points:

1. Careful removal of the deteriorated mortar from the joints so as not to damage the brick.
2. Correct proportioning of lime and cement in the new mortar.

3. Matching the color and texture of the new mortar with the old.
4. Proper tooling of the finished joint to match the old joints.
5. Neatness and good workmanship.

Removing deteriorated mortar to prepare the joints for fresh mortar is a crucial step that is often rushed, with the result that brick can be permanently damaged. Traditionally, deteriorated mortar was removed with easy-to-control hand tools. This is still the preferred method because it minimizes the chance that the edges of the brick or stone will be chipped. Today, however, the widespread use of electric circular saws or grinders to remove old mortar has increased the speed with which a job can be done, but has also increased the likelihood the brick will be damaged. The powerful, high-speed saw blade whirring in a cloud of mortar dust often cuts into the edges of the brick and widens the mortar joint considerably. After repointing, the repaired joints will look clumsy and out of character with the rest of the wall. Using power saws also makes it very easy to cut away good mortar and can thereby needlessly increase the size and cost of the job.



■ Power grinders and tuckpoint saws should not be used to remove mortar from knife edge joints like these.

The design of some tuckpointing grinders or saws has improved in recent years to give the operator greater control, but they still should be used only with the greatest of caution and never where the mortar joints are less than $\frac{3}{8}$ of an inch thick. Many commercial buildings in the city feature mortar joints that are only about $\frac{1}{4}$ of an inch thick. Probably the

best modern power tool for removing old mortar is a specially fitted, air-powered chisel that was originally made

for stone carvers. Contractors interested in doing top-quality work often use this tool.

It is important to try to match the strength of the original mortar when repointing joints in an old masonry wall. Mortar is a mixture of cement, lime, sand and water. Years ago, mortar for brick and stone walls typically had a very high lime content and sometimes contained no cement at all. Lime cures very slowly and actually becomes stronger with age. Lime-rich mortar is relatively soft. Because it is slightly water soluble, one of its attributes is that small cracks in it are self-healing. As water and air flow into a crack in lime mortar, a



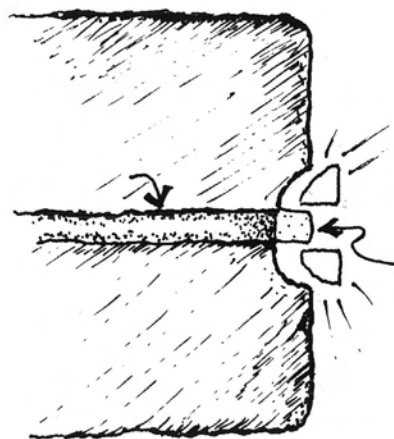
■ The poor quality tuckpointing detracts from the appearance of this building.

reaction occurs with the uncured lime which then slowly dissolves to fill in the void and restore the integrity of the joint.

Remember that harder mortar is not necessarily better mortar. A Portland cement-rich mortar is very hard and will fuse a wall into a rigid, inflexible mass. Despite its strength and hardness, a slight shifting or settling of the wall can easily break the bond between the brick and mortar. Portland cement-rich mortars are not self-healing, and even very small cracks, unless repaired, will continually allow moisture to penetrate the wall.

Using a tuckpointing mortar that is significantly harder than the original mortar is not recommended. A typical historic brick wall made with lime-rich mortar will expand and contract slightly with changes in temperature and moisture. As the brick expands during hot or moist weather, the relatively soft, compressible,

lime-rich mortar will absorb some minute expansion and then flex back into shape when the bricks contract again during dry, cold weather. Portland cement-rich mortar, on the other hand, is rigid, non-compressible, and inflexible, and it can crack as a result of expansion and contraction. Damage to soft old cream brick can also occur over time if Portland cement-rich mortar is used to repoint the front edge of a lime-rich mortar joint. This happens because the soft mortar in the back of the joints compresses as the brick expands, but the hard, rigid, Portland cement-rich



■ Don't use hard Portland cement mortar to repoint soft old cream brick.

mortar at the front of the joints won't, putting stress on the front edge of the soft cream brick, which will crack or chip as a result.

Old mortar can be chemically analyzed in a laboratory to determine its composition, although usually an experienced mason can use his experience and

judgment to mix a mortar of appropriate hardness. Type O masonry cement will make a relatively soft mortar that is appropriate for tuckpointing the cream brick walls found on older buildings.

Matching the color and texture of old mortar should be the goal of any repointing job, but it is a process that takes skill and sometimes a bit of luck. An experienced mason should be able to do a reasonable job matching mortar color, but old mortar can also be color-matched in a laboratory for owners who want the best possible repair. Small test patches should always be made on site and then evaluated thoroughly before any extensive repointing is done. Nothing looks worse than the blotchy appearance of an old wall where the new tuckpointing contrasts in color with the old mortar joints.

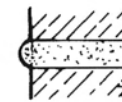
Neatness and good workmanship are important when new mortar is being packed into the joints. Mortar that is smeared across the face of brick or stone is extremely difficult to remove when it has dried and makes the entire job look sloppy. Minor, dried mortar stains can be successfully removed with a wash of muriatic (hydrochloric) acid, but this should not be treated as a substitute for keeping the brick clean in the first place.

The style or shape of the mortar joint is a major factor in the appearance of any masonry wall, and it is vital that newly repaired joints match the old joints. There are at least seven common types of mortar joint styles, and a contract for tuckpointing work should specify exactly how the repaired joints will be finished. Most masons should have no difficulty in duplicating any of the historic mortar joint styles.

TRADITIONAL MORTAR JOINT STYLES



GRAPEVINE JOINT

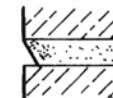


BEADED JOINT

■ These two joints are used mainly with stone rather than brick.



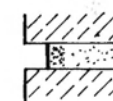
V-JOINT



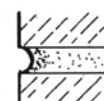
STRUCK JOINT



WEATHER JOINT



RAKED JOINT



CONCAVE OR HALF
ROUND JOINT



FLUSH JOINT

CLEANING BRICK AND MASONRY

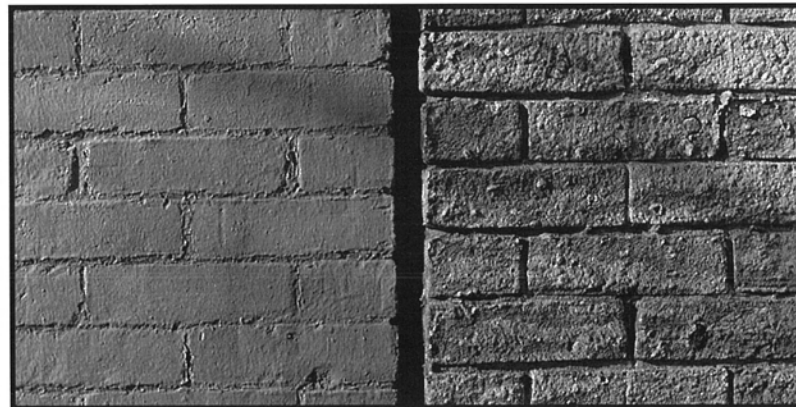
Cleaning dirty masonry can dramatically improve the appearance of a building but will probably do little to actually extend the life of the structure. Dirt that has been on brick for decades probably is not harming it and may, in fact, serve as a protective “skin” to shield the masonry from direct contact with some of the potentially harmful pollutants that are sometimes found in the air today.

Although the technology of cleaning brick and masonry has progressed tremendously in recent years, the procedure is still somewhat risky in terms of the overall results. Cleaning brick can expose mismatched brick and unsightly variations in mortar colors that were caused by repairs done years ago. Certain types of weather stains might be uncovered that can be nearly impossible to completely remove from brick. It is also important to remember that, in some cases, the patina of aged masonry might be preferable to a bright, “just cleaned” appearance.

Sandblasting must never be used to clean brick or masonry. It cannot be overemphasized that sandblasting invariably destroys the hard, protective outer “skin” of soft cream brick and actually accelerates deterioration, staining and discoloration of the masonry. Sandblasting is a process where a concentrated stream of fine sand or other abrasive material is propelled against a surface at high velocity by compressed air. The process does not actually clean the surface of

brick but rather erodes the hard, weather-resistant surface layer to expose the “clean” inner core underneath. Unfortunately, the inner core of brick is soft, porous clay that acts like a sponge to rapidly soak up damaging amounts of water and pollution. Once sandblasted, cream brick will probably have to be painted to keep the brick from powdering away.

Maintaining the appearance of a sandblasted building is actually very costly because the pitted brick



■ The sandblasted brick on the right is pitted and spongy-looking. It will absorb moisture, attract dirt, and powder away. The damage done by sandblasting is irreversible. The hard, smooth surface of the unsandblasted brick on the left will withstand the effects of weathering unharmed for centuries. The paint can be removed from the brick on the left using chemicals without harming the brick.

surface attracts dirt much more rapidly than smooth brick and will, therefore, have to be sandblasted again and again to maintain the desired clean appearance. Sandblasting brick begins a costly vicious cycle of repeated sandblasting that has no end. There are other problems that result from sandblasting as well. Mortar joints can be severely eroded by sandblasting, which

results in the need for costly tuckpointing that may not have been necessary in the first place. The rough, porous surface of sandblasted brick also makes it much more difficult to remove graffiti.

Despite two decades of efforts to educate the public about the false economy and dangers of sandblasting brick and other masonry, the practice continues. A sandblasted building may not be eligible for nomination to the National Register of Historic Places

nor for the valuable tax credits that accompany historic designation because the Federal government considers the structure to have been irreparably damaged. Sandblasted historic buildings may also have reduced sales potential because of the growing public awareness about the undesirability of sandblasting and its costly long-term maintenance implications.

There is no such thing as “safe sandblasting” despite some contractors’ claims to the contrary. Using “softer” glass bead abrasives or mixing sand with water still does not alter the fact that the surface of the brick is being slowly eaten away.

The only acceptable methods to clean masonry are with chemicals, low pressure power washing with clear water, or by hand-scrubbing with water and a mild detergent. Hand scrubbing, admittedly, will probably not be sufficient to remove the decades of soot and grime that accumulate on a porous masonry wall in an urban environment; so, either power washing or chemical cleaning will be the usual course of action.

Power washing, independent of any chemical cleaners or solvents, can be an effective means to clean dirt from hard pressed brick, terra cotta and stone, particularly when the masonry surface is relatively smooth and dense. Power washing by itself will, however, be of only limited use in cleaning weathered Milwaukee cream brick and other relatively soft, porous masonry surfaces, and chemical cleaning agents will probably have to be used.

Most chemical cleaners that can safely remove dirt from brick are primarily composed of hydrofluoric acid. This should not be confused with hydrochloric acid, also called muriatic acid, which is an off-the-shelf product that can dissolve mortar stains on brick but cannot remove dirt or most paints.

As a general rule, building materials other than brick can be damaged by brick cleaning chemicals and should be shielded or protected when the building is being cleaned. Window glass, in particular, should be protected with plastic sheeting, or, better yet, a special liquid vinyl "acid shield" that is painted on the surface and later peeled or scraped off when the job is done.

Brick cleaning chemicals are usually sprayed or brushed-on. After the surface dirt is dissolved, the chemicals are rinsed away by power washing with a concentrated stream of clear water propelled by compressed air. Under no circumstances should any abrasive agent such as sand, walnut shells or glass beads be mixed in the wash, and the pressure should never exceed 500 lbs. per square inch. One of the key tools used in the power washing process is a water wand which is controlled by an operator to disperse the water in specific patterns. When a water wand with a

narrow-dispersion nozzle is held too close to a building, snake-like patterns can be permanently etched into soft brick. Care must be taken to avoid having this happen, particularly with cream brick.

Ultimately, the success of any masonry cleaning project depends upon the skill of the operators. Only contractors who have a proven track record in the satisfactory removal of dirt and paint from old masonry should be employed. Avoid contractors who regularly combine chemicals with sandblasting to clean masonry.

The application of clear sealers to masonry is strongly discouraged. Sealers have a tendency to slightly discolor the masonry, but, even worse, they can cause irreparable damage to buildings by trapping water inside the masonry leading to spalling. Sealers also tend to fail fairly quickly and must be frequently reapplied if they are to be of any use at all in retarding moisture penetration. This can become quite costly. In general, even the softest cream brick does not require moisture retardants because nineteenth century builders designed their walls to account for normal wetting and drying cycles. If a cream brick wall has been sandblasted, it may be necessary to seal the brick to prevent the exposed soft interior of the brick from powdering away, but masonry paint would probably be more effective and long lasting than a clear sealant.

GRAFFITI REMOVAL

Removing graffiti from masonry should always be done in a manner that will not permanently scar or alter the surface of a wall. Most graffiti, if it is executed in spray paint or marking pen, can be quickly

removed with heavy-duty commercial paint strippers that are recommended for the job. Chemical paint strippers have the advantage of removing paint without pitting or eroding masonry and can be used safely again and again in the same spot if repeated acts of vandalism occur. The stripping agent can be brushed or sprayed on and, after allowing the chemical to work for the period of time specified by the manufacturer, can be washed off with clear water from either a garden hose or a low-pressure power washer. Please refer to the brick cleaning section of this chapter for guidelines on the safe, recommended use of power washing equipment. Keep in mind that muriatic acid, which is used for dissolving mortar stains on brick, is generally ineffective at removing painted graffiti and should not be used.

Under no circumstances should pressurized sand, glass bead or other abrasive blasting methods be used to remove graffiti because they will permanently damage the wall. It is a mistake to use abrasive blasting with the reasoning that, "I know it's not good for masonry, but this is just a small area," because the consequences are dramatic and irreversible.

First, any abrasive blasting will contribute to the deterioration of the wall and, particularly when blasting is used again and again in the same spot to clean repeated acts of vandalism, craters or snake-like patterns will be worn into the side of the building. The sandblasted area will also look much different from the rest of the wall and may serve as a "target" that attracts vandals to deface a building again and again.

A recent innovation in abrasive blasting technology that should be avoided is the so-called "soda

blaster” that removes painted graffiti by bombarding it with a mixture of baking soda and water propelled by compressed air. This “new” technology has the same drawbacks as any other abrasive blasting methods in that, although it will remove paint, it also erodes some of the masonry in the process.

STONE RESTORATION AND CONSERVATION

Not long ago, deteriorated stonework was thought to be virtually irreparable. The only solution was believed to be replacement with new stone. Today, however, modern restoration technology has made possible the lasting, satisfactory reconstruction of even severely deteriorated decorative stone.

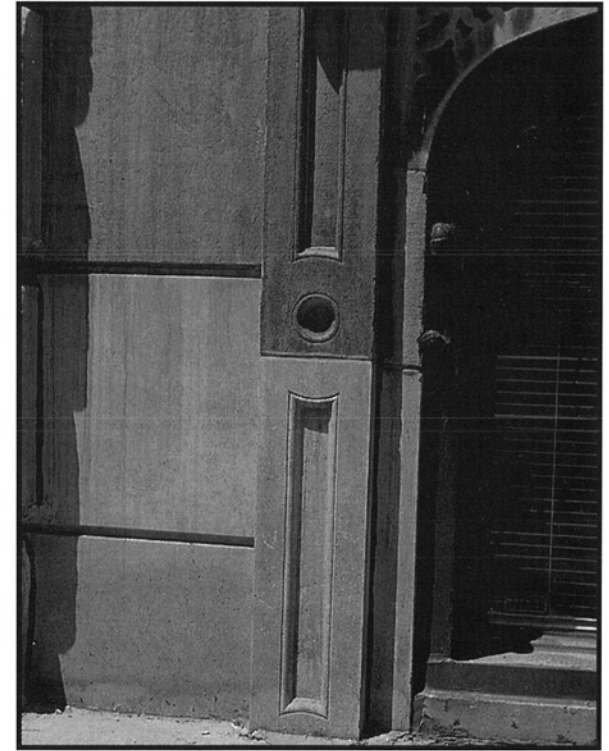
The most popular stone for trim on older Milwaukee commercial buildings was a high-quality, hard, white limestone quarried principally in Milwaukee County. Seldom has this type of limestone shown any appreciable deterioration. However, many of the softer, red and tan sandstones popular 100 years ago have not withstood time as well. Typically, the surface of the sandstone slowly flakes or chips away. The loss of carved detail, as a result of this weathering, can be dramatic and detract from the appearance of the building, although there is generally no danger of structural failure. In addition to natural deterioration, some very fine stonework has been damaged by insensitive remodeling projects, such as cutting into a stone

cornice to install a sign or a new storefront, and may now need restoration.

Specialists in stone repair and conservation can rebuild damaged stone using modern “restoration mortars” that are applied to the face of the stone and then carved and shaped to match the original stone. Restoration mortars are new, custom-prepared mixtures that can duplicate the texture and color of original stone. Avoid using any replacement material, however, that does not allow moisture to pass through it. Replacement

mortars that are vapor impermeable can trap water in the natural stone and cause further deterioration.

Deteriorated stone can also be completely removed and replaced with either a new, matching stone or a cast, concrete piece that is carefully fabricated to match the color, texture and appearance of the original stone. The replacement of old stonework with new pieces can result in considerable disturbance to the surrounding masonry and is not recommended unless the other repair options are not feasible.



■ The new stone pieces on the right were installed to replace the severely deteriorated old stone shown on the left. Over time, the new stone will weather to more closely match the old stone in color.



■ New colored cast concrete pieces are being installed to replace these deteriorated red sandstone quoins.

FOUNDATIONS AND BASEMENTS

In the vast majority of cases, the original foundations under most buildings will last for centuries without requiring any major repairs. Sometimes, however, structural problems can develop that need attention. Bear in mind that foundation work can be very costly. It is important, therefore, to do only work which is absolutely necessary to ensure the preservation of the structure. Far too often, inflated estimates for foundation repairs that have included unnecessary work have been used as the economic justification for demolishing historic buildings.

Before about 1900, most basements were made of brick or stone. Concrete block became popular after 1900, and, around 1914, poured-in-place reinforced concrete came into use for basements and is still widely used today. Cracks in the foundation walls and water seepage in basements are the two most common foundation problems in older buildings.

Most basement or foundation problems develop over a long period of time. Generally, there is plenty of time to carefully study the situation before making any decisions on the type of repair work that needs to be

done, so don't rush into repair work before you have evaluated what is causing the problem and the repair options. Basement walls that are severely buckled and leaning will probably have to be rebuilt, but this is relatively rare.



■ A brick basement for a commercial building under construction on West Lincoln Avenue about 1910. (Photo: Kwasniewski Collection, Golda Meir Library, University of Wisconsin-Milwaukee)

A few hairline cracks in foundation walls due to the minor settling of the building are actually quite normal and generally present no serious problems. A crack that continually widens, however, is cause for concern and could indicate serious structural problems. Cracks anywhere in a building can be monitored with a very simple and inexpensive device, called a crack meter, which is fastened securely in place over a

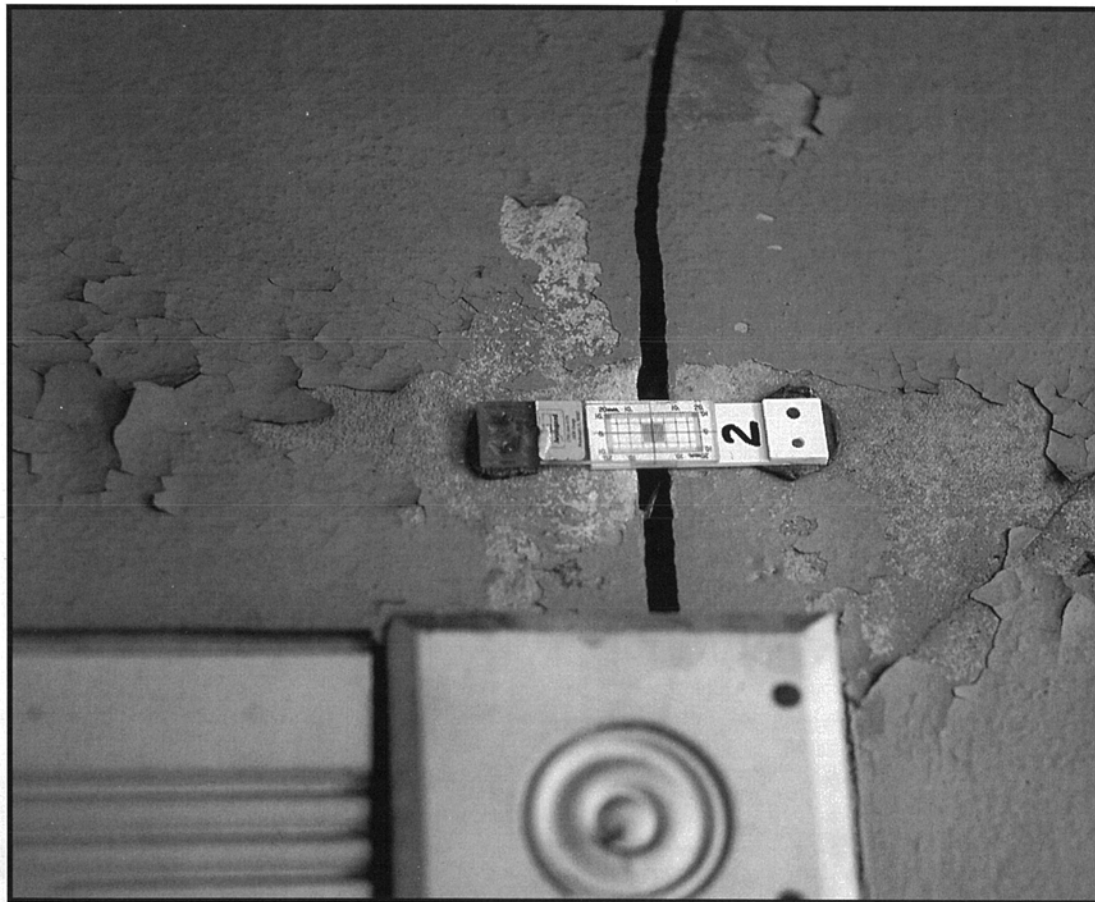
crevice and will accurately record very tiny movements over time on a small graph.

Before a crack or abnormality in any basement wall can be repaired, the source of the problems must be identified. Many cracks are due to pressure from the earth pressing against foundation walls. Clay soil, which is common in Milwaukee, can greatly expand when it is water-soaked and will literally push a foun-

dation wall out of its way in the process. Another source of cracks stems from the erosion of soil under foundations. This erosion usually results from poor water drainage from roofs and the ground adjacent to the building. To prevent roof-related water problems all rain gutters, scuppers and downspouts on a building should be checked to make sure they are draining properly and are not spilling water into the clay soil found around the foundations of many Milwaukee buildings. The metal or clay conductor pipe below ground that channels water from the downspout into the building's drain can also sometimes be cracked or plugged, thus sending huge amounts of water cascading against the foundation, unseen, for years. A defect in the guttering system is one of the most common causes of water seeping into a basement.

The foundation of any building can also be disturbed by heavy construction, such as pile driving for foundations and tunnel or road work in the immediate vicinity. Heavy equipment or vehicles parked in a driveway next to a building can also exert considerable pressure on a foundation and sometimes cause cracks to form in the walls. Some commercial building owners actually post limits on the gross weight of vehicles that are allowed to park close to the foundations of their buildings.

Some old stone basements were built to stand by the forces of gravity alone, and mortar was later packed into the joints merely to fill the gaps. In these cases, the mortar might now be cracking or crumbling. Because the mortar really serves no structural purpose in the first place, there is probably no cause for alarm, and normal tuckpoint repairs can be made.



■ A crack meter will measure movement in a wall.

Many cracks in poured concrete foundation walls can be successfully and permanently repaired with a new process called structural epoxy crack injection which literally welds the concrete back together again with a chemical compound specially designed for the purpose. Structural crack injection is only effective if the wall is no longer shifting or settling. A concrete or brick foundation wall, if it is still basically sound, can also be reinforced with the addition of new wall pilasters, which are columns of concrete or concrete blocks filled with concrete, that are attached to the inside of a foundation wall to brace it against outside pressure.

Old stone and brick basements are sometimes excavated in order to seal the outside of the foundation with a new layer of cement plaster called parging. Simultaneously, cement or plastic pipes, called drain tiles, are often installed at the bottom of the foundation in order to collect ground water and channel it to a storm sewer or a sump pump. Drain tiles were usually included in the original foundation work for most small commercial buildings constructed after about 1900, but after nearly 100 years, the drain tiles may be clogged or broken and only be minimally functional at this point. Excavating around an old foundation is sensitive work that could actually disrupt the careful balance between the masonry wall and the earth surrounding it and should be approached with great care. In general, excavating completely around the perimeter of a foundation and installing new drain tiles should probably only be undertaken when all other means of correcting seepage or cracks have been ruled out.

STUCCO

In Milwaukee, stucco was used primarily on the upper stories or in the gable areas on the fronts of some styles of commercial buildings between about 1895 and 1935. Because stucco is a lasting, low maintenance material which has a distinctive architectural character all its own, every effort should be made to repair or replace it with in-kind materials.

Stucco should never be covered with modern vinyl, steel, or aluminum siding. Stucco contractors can

make lasting repairs to old stucco, often at a cost far less than installing replacement siding or some other inappropriate sheathing material. Cracks in stucco should always be promptly repaired or else water will penetrate the building and cause serious damage, often in a very short period of time.

Traditional stucco is a mix of Portland cement, sand, and sometimes a small amount of lime installed over wooden or metal lath. The key to any good stucco repair is matching the surface texture of a patch to



■ This stuccoed gable on a turn-of-the-century commercial building has a grooved texture that should be maintained if the stucco ever needs to be repaired.

the original material, which should not be a problem for most experienced contractors. Stucco should not be confused with the “exterior insulation and finish systems” (EIFS for short) now in use in new construction which are composed of a foam insulation board underlayment that is topped with a very thin, top-coat of synthetic stucco. EIFS cannot duplicate many of the historic stucco textures and may not be as durable. Old stucco should never be patched with EIFS.

TERRA COTTA

Terra cotta is a unique building material made of molded clay that is baked in kilns at high temperatures. Translated from the original Italian, terra cotta literally means “cooked earth.” Prized for its outstanding durability and low maintenance, terra cotta was used to mass-produce fine cornice work,



■ Ornamental terra cotta on a 1920s commercial building

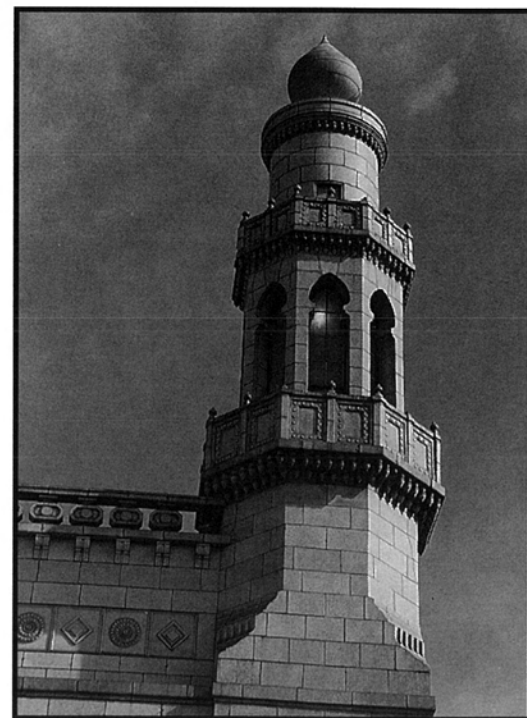
wall sheathing tiles, and molded trim around storefront doors and windows. Structural, hollow, terra cotta blocks were also used extensively in fireproof wall construction for commercial buildings.

Although terra cotta has been in use for thousands of years, it really did not catch on in America until about 1890 and even then, the material did not reach the zenith of its popularity until the 1920s. Newly made terra cotta is still available commercially for use in recreating a period style storefront. Single replacement pieces needed for repair work can be obtained, but these must be custom-made by people specializing in terra cotta replication.

Although its surface is prone to developing hairline cracks, terra cotta rarely experiences structural failure unless it is subjected to extreme conditions or abuse. The principal problem with existing terra cotta is usually the repair or replacement of damaged or missing sections. Because of recent technological advances in the manufacture of terra cotta and simulated terra cotta products, it is again a realistic option to repair damaged terra cotta. Several firms around the country are capable of reproducing genuine terra cotta in nearly any design. In some cases, depending on the type and appearance of the piece being replaced, other less expensive alternatives may be available.

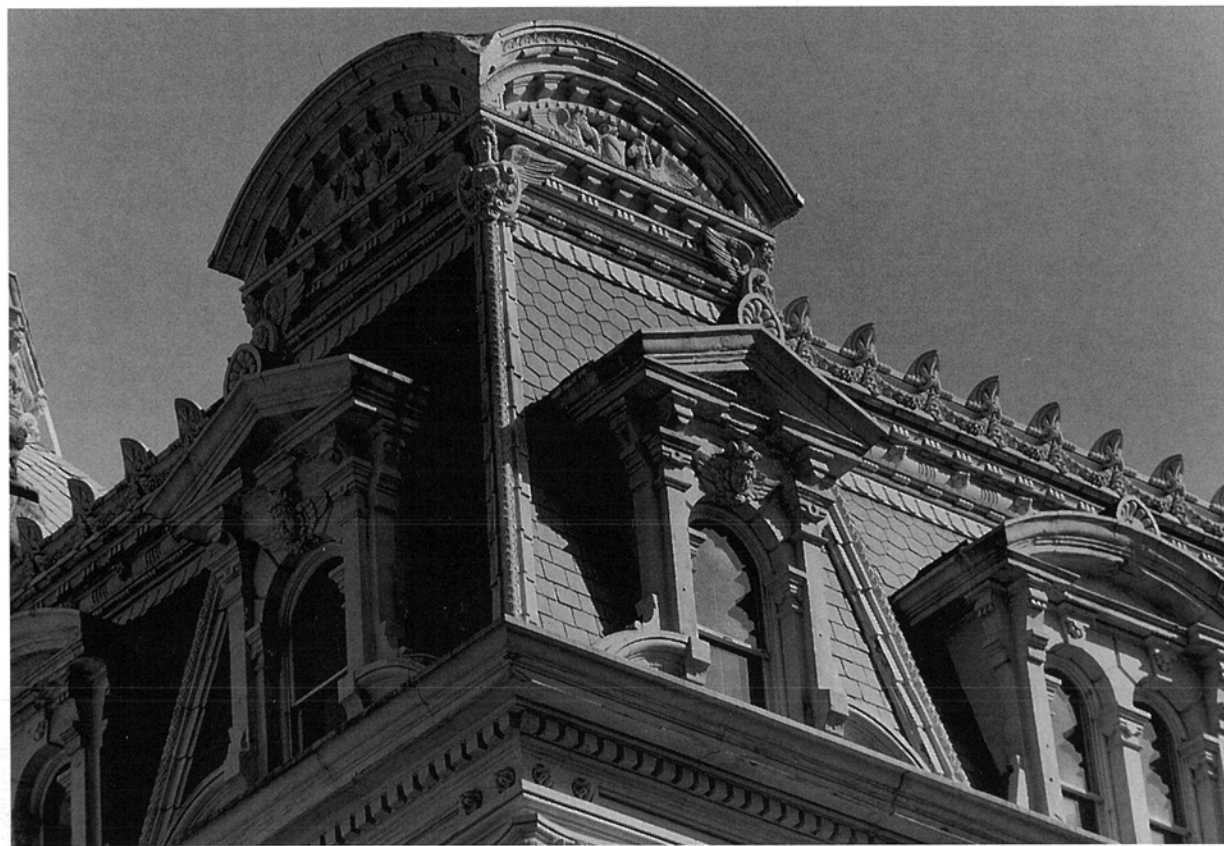
Terra cotta substitute pieces can be cast in lightweight, modern polymer (plastic) materials that have an authentic appearance, although the durability of this product in the long term is still unknown. This is an economical way to replace small sections or individual pieces of extremely ornate terra cotta or to reproduce entire missing decorative elements, such as cornices.

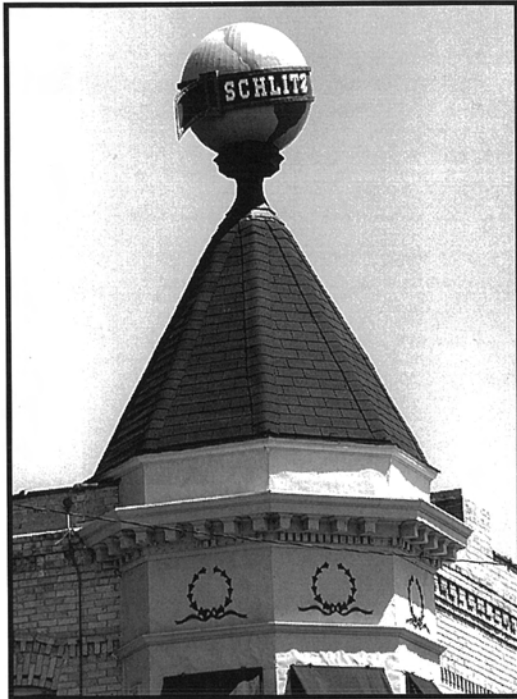
Cast Portland cement can also be molded and tinted locally by ornamental plaster craftsmen to replace damaged terra cotta. Portland cement is very durable and should last for many years, although it is not known to be permanently colorfast like real terra cotta and, over the years, some fading is likely to occur. When installing Portland cement replacement pieces in a terra cotta wall, it is very important to keep in mind that since these cement pieces are much harder than terra cotta, the mortar used to set the new cement pieces should contain a high level of hydrated lime to act as a flexible joint to allow for expansion and contraction so that the adjacent terra cotta pieces won't crack. ■



■ By the 1920s, whole buildings were clad in terra cotta tiles.

ROOFING





■ The dramatic pointed roof at 2414 S. St. Clair Street is an eye-catching feature intended to call attention to this small commercial building.

Years ago it was commonplace for the roofline of a small commercial building to be an architectural focal point and, in a sense, a type of permanent advertising for a business. A corner store, for example, featuring a tower topped with an elegant tapered roof was a visual landmark that enhanced customer recognition of a business. Regardless of the visual or aesthetic importance of a roof, it makes good business sense to maintain and repair it because even seemingly minor roof

■ Preceding page: The roof of the Mitchell Building, 207 E. Michigan Street.

leaks can result in costly water damage to the structure and its contents. By making knowledgeable decisions about the type of roofing material used for repair or replacement, the owner of a commercial building can actually reduce long-term maintenance expenses and, if the roof is a major design element, enhance the curb appeal of the building.

Small commercial buildings are usually topped with either flat or pitched roofs or with a combination of the two. Because a flat roof usually can't be seen from the ground, the appearance of the roofing materials is usually not a major concern. Nevertheless, proper roofing materials and flashings must still be installed in order to keep water out of the building. A pitched roof, on the other hand, is often a very visible design element that, when finished with the proper materials, adds character and visual interest to the building as well as protects it from the elements.

A roof is usually either structural or ornamental, but seldom both. A structural roof is an inseparable part of the building whose primary function is to shelter the interior from the elements. An ornamental roof, on the other hand, is usually a decorative feature that adds architectural character, but has no

real role in keeping the weather out. A flat-roofed, 1920s commercial building, for example, might be trimmed with a projecting ornamental "pent" roof at the eaves composed of an inclined plane covered with half-round clay roof tiles. Such an ornamental roof serves not only to dignify the roofline, but also may function as an overhang to partially shelter the storefront display windows from rain and strong sunlight.

Even though it is primarily decorative, it is just as important to maintain an ornamental roof as it is a structural roof. Usually, maintaining an ornamental roof in watertight condition is cheaper than demolishing it and patching the area where it was removed. In addition, removing an original ornamental roof can damage the architectural character of a building leaving it looking scarred and shabby.



■ An ornamental pent roof.

FLAT ROOF COVERINGS

A flat roof must be covered with a continuous, watertight membrane made of synthetic rubber, sheet metal or built-up tar and gravel. Because a flat roof usually can't be seen from the ground, there is a tendency to ignore routine maintenance until serious leaks develop. It is important to periodically inspect a flat roof for damage and deterioration. All debris such as tree branches and foreign objects should be promptly removed. Standing pools of water that accumulate on a flat roof after a rain will quickly identify depressions in the roof surface that should be filled-in and leveled by a qualified roofer.

Most flat roofs were not built to be perfectly flat or level, but were actually crowned or pitched slightly in order to direct water from the roof surface to a gutter or roof drain. The amount of slope in a roof is usually expressed in terms of how many inches a roof rises vertically over a horizontal span or "run" of

12 inches and is written as a fraction such as 3/12, meaning the roof rises 3 inches vertically for every 12 inches of horizontal run. Roofs with a pitch of 3/12 or less must be covered with flat roofing materials, because shingles, slates and tiles simply are not designed to be watertight at such a low slope.

BUILT-UP ROOFING

The built-up hot tar roof has been used in America since about 1840, and it was probably the material of choice for most flat commercial roofs in Milwaukee until recent years. A traditional built-up roof is made of five or more layers of asphalt-saturated felt paper that are each mopped with a coat of hot coal tar. Gravel is often imbedded in the final, top layer of tar to finish the installation, leading many people to call this familiar roof type a "tar and gravel" roof.

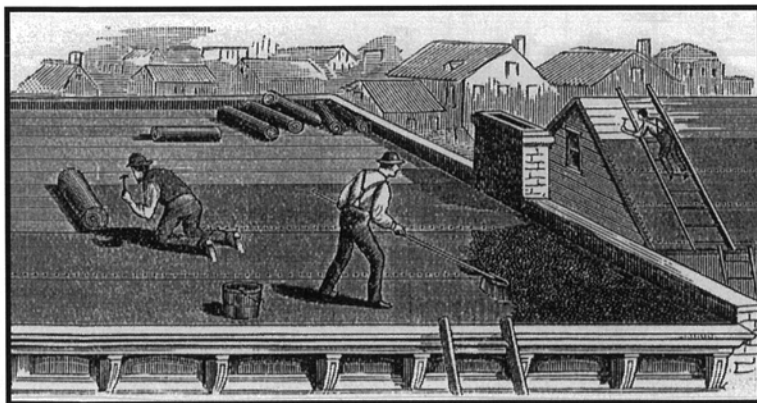
A properly installed built-up roof is very durable and should last many years. Damaged portions can also be spot-repaired if the majority of the roof surface is still in good condition. Hardware store-variety black caulks and sealants, however, will not make a lasting patch. Patches made with roofing tar usually quickly fail and channel water to the building's interior. Repairs should be done by qualified roofers. Over the years, neglected built-up roofs can crack and blister creating small voids that can catch wind-blown debris

such as leaves and seeds. Moss or lichen and even small trees or grass can begin to grow in the voids, which will lead to additional deterioration of the roof. Because of the multi-layered composition of a built-up roof, leaks may eventually appear on the interior at spots that are not necessarily directly below the damaged portion of the exterior roof surface.

If a built-up roof is extensively cracked and blistered, it must be completely torn off and replaced. If the deterioration is not so severe, new layers of built-up roofing can sometimes be applied over the old roof. A built-up hot tar roof is still a desirable type of flat roof covering today, although the number of firms doing the work has dwindled significantly in recent years.

Even the best built-up roof is only as good as its flashings, which are the metal pieces that are installed to prevent leaks around objects that abut a roof or that protrude through it, such as parapet walls, chimneys, scuttle holes or plumbing pipes. The presence of extensively corroded flashings is often a warning sign that water is leaking into the building. Make sure that contract work for a new built-up roof specifically calls for all new metal flashings or at least a careful evaluation of the condition and remaining useful life of the existing flashings that will be retained.

Today when an old, flat roof is completely torn off and replaced, it is a common practice to install rigid foam insulation on the roof deck as an underlayment for the new flat roof material. Usually, foam insulation is shaped to pitch the finished roof surface toward a gutter or drain. In addition, if the edges of the roof are not hidden behind parapet



■ This drawing shows built-up roofing being installed on a commercial building in the late nineteenth century.

walls, foam insulation is usually tapered back from the roof edge to prevent the edge of the roof from being seen.

Rigid foam insulation works best at reducing energy costs when the space immediately below the roof is regularly heated. Energy savings will be less when the interior area immediately beneath it is an attic or unused space that is never heated.

RUBBER MEMBRANE ROOFING

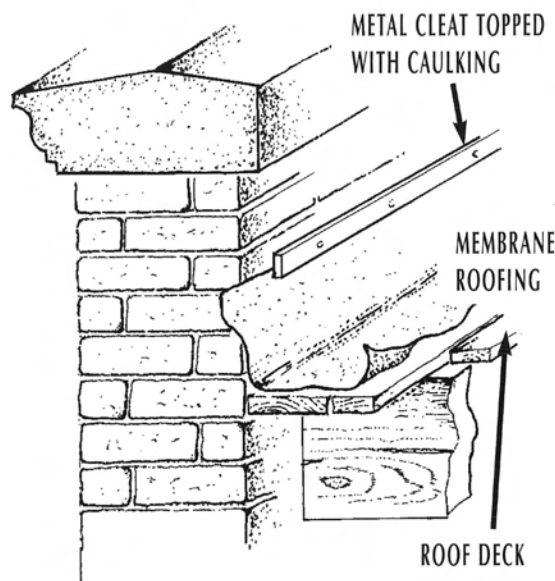
Synthetic rubber roofing has gained widespread acceptance in recent years as a durable and cost-effective alternative to traditional built-up roofing. Compared with built-up roofing, synthetic rubber membrane roofing can be installed faster, thus reducing labor costs.

One of the principal advantages to the roofer in using a rubber membrane is that it can be used as both the roof cover and the flashing material. There can be substantial differences among contractors in the methods used to attach or “flash” the rubber roofing material into a projection above the roof surface, such as a brick parapet wall or a chimney. The least desirable method is to simply run a piece of rubber membrane up a masonry wall, fasten it into place with a metal strip or cleat, and then caulk the joint. This “cleat and caulk” method is acceptable only if the joint is further protected by another piece of “counter flashing” which covers the exposed cleated connection area.

There are at least three methods of attaching rubber membrane roofing material to the roof structure: gluing, ballasting, and torching. While all three of these methods are acceptable for masonry buildings

with concrete roof decks, a membrane should never be bonded in place with a hot torch when the underlying roof deck is made of wood, which could catch fire.

Fires caused by using an open flame for roof work are one of the leading causes of destruction of older buildings. A safe alternative in this case would be gluing the membrane in place or perhaps using a layer of small diameter stones called “ballast” to keep it in place.



■ The cleat and caulk method of installing membrane roofing should be avoided because it is prone to leaking at the point where it is attached to the parapet wall.

Synthetic rubber roofing materials have only been in wide use for a comparatively short time, and little is known about their longevity. Although rubber roofing holds promise as a durable and less costly alternative to traditional built-up roofing materials, it

is important to select a contractor who has a proven track record in working with this material. Ask for references of jobs that the contractor has completed with rubber roofing during the past several years, and check with those owners to see how the work has held up. Beware of any contractor who offers an unconditional, extraordinarily long guarantee of ten or more years on workmanship and materials. Although a good flat roof should last much longer than that, reputable contractors seldom offer unconditional guarantees of more than three to five years because there are many factors beyond their control that could affect the longevity of a flat roof covering.

PITCHED ROOF COVERINGS

There are many different kinds of roofing materials that can be used to protect a pitched roof on an older commercial building. The material you choose to use should reflect not only your budget, but also the visual importance of the roof. An ornamental roof, for example, derives much of its character from the type of roofing with which it is covered. The most common types of roofing for pitched roofs are flat shingles made of either asphalt, metal, mineral fiber or wood. Molded tiles made of cement or clay and slate shingles are also fairly prevalent.

Although the initial costs of these materials can vary considerably, each should be evaluated on the basis of its cost relative to its longevity. Some roofing materials that are initially costly, such as slate, last a very long time with little maintenance. Over the long run, they are actually the least expensive. A long-life,



■ For a commercial building with a highly visible pitched roof, the choice of roof covering is important if the building is to retain its visual appeal.

low maintenance roof can reduce or eliminate the aggravating repair bills that most business owners seek to avoid.

ASPHALT AND FIBERGLASS SHINGLES

Asphalt or fiberglass shingles, because of their availability and relatively low cost, will probably be the material of choice for most pitched roofing replacement projects today. Asphalt shingles are made of burlap or other fabric impregnated with asphalt. Fiberglass shingles use a fiberglass mesh, rather than fabric. In recent years, the market has been flooded with a still-increasing number of so-called “architectural shingles” that are thicker, last longer, and are styled to look somewhat like wooden shingles or natural slate. Few of these new shingles are really convincing as

substitutes for the natural materials they attempt to imitate, but most add interesting shadow lines to the roof. However, because many of these specialty asphalt shingles are considerably more expensive than standard asphalt shingles, you should carefully compare them with the costs of installing other traditional roofing products such as shingles made of metal, mineral fiber or wood.

Regardless of the style of asphalt or fiberglass shingle you choose to install, it should carry a “Class A” fire resistance rating. In addition to black and charcoal grey,

most shingle manufacturers offer a color that resembles weathered wood, which is usually appropriate. In addition, you may want to consider using dark green, red, or dark brown shingles to match the most common colors used for the original asphalt shingle roofs that topped many of the city’s older buildings. You should keep in mind, however, that a good quality roof will outlast most paint jobs. If you select a shingle color to match your paint scheme, you will be limited in the colors that you can paint your building in the future. Dark colors, such as black, dark grey, or weathered wood, allow a full range of paint schemes, both now and in the future.

According to current city building codes, rolled asphalt roofing products cannot be installed in place of shingles. Also, if a pitched roof has more

than three layers of shingles, it must be completely torn off down to the bare sheathing before a new shingle roof can be installed. In order to keep the shingles securely in place and to better resist wind damage, it is recommended that a new shingle roof be installed by hand-nailing rather than with air-actuated staplers and nailers. For an authentic, more decorative finished appearance, a modern asphalt or fiberglass shingle roof can be trimmed with traditional rolled metal hip and ridge caps. These are especially effective when installing new shingles on a prominent tower roof. Although not usually part of a roofing job today, rolled ridge caps are still available from a few sheet metal manufacturers or can be specially made. They add a handsome ornamental touch to a roof.

SHEET METAL SHINGLES

Sheet metal shingles were a popular roofing material for small commercial buildings constructed between the late 1880s and about 1930. The shingles were light in weight, offered excellent protection from fire, and had a long service life coupled with relatively low maintenance. A good selection of quality sheet metal shingles is still available today, and strong consideration should be given to installing them on appropriate decorative or prime roofs on older commercial buildings. Metal shingles made of copper cost the most, but will return a very long service life with little or no maintenance. The more common galvanized steel shingles are less expensive, but must be painted periodically to protect them from corrosion.

Many small commercial buildings in the city, in fact, still retain their original sheet metal shingle roofs that were installed 60 or more years ago. Buildings constructed before 1910 were typically fitted with flat sheet metal shingles that were formed to look like decoratively shaped slates or wooden shingles. Reflecting the changes in architectural tastes between about 1910 and 1930, sheet metal shingles that mimicked half-round Roman and Mission style clay tiles were a much lighter and less expensive alternative to using the genuine ceramic products. Half-round Spanish style metal shingles were particularly popular for use on Arts and Crafts and Mediterranean ornamental roofs during the 'teens and 'twenties.



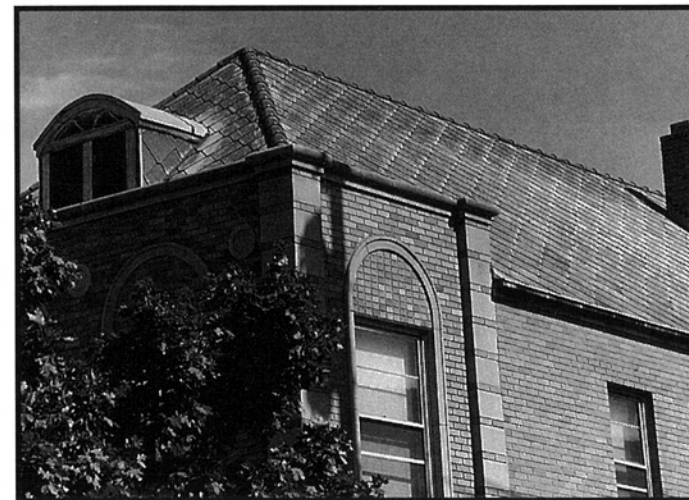
■ Spanish style metal roof tiles on a 1920s commercial building.

MINERAL FIBER SHINGLES

Mineral fiber shingles, originally called cement asbestos shingles, are thin, slate-like slabs made of tightly compressed Portland cement reinforced with special mineral fibers. Mineral fiber shingles are made to last a lifetime with little or no maintenance and are still manufactured today, although they usually do not use asbestos as the fiber anymore. This type of shingle was introduced to America about 1905 and would be appropriate for use on many pitched roofs built after that date, especially those built in the 1920s, 1930s and 1940s. One of the

most popular, historic shapes of mineral fiber shingles, the hexagon, is still a good choice for a new, distinctive, low maintenance replacement roof today. Some mineral fiber shingles approximate the appearance of slate and might be considered when the cost of completely replacing or replicating an original slate roof would be too costly.

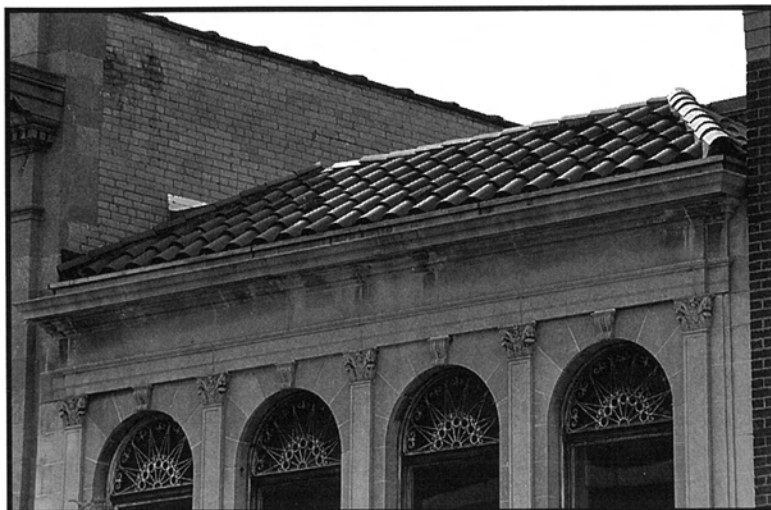
Every effort should be made to preserve an older, existing mineral fiber shingle roof. Leaks usually develop in the flashing rather than the roof material itself. Some contractors make a specialty of working with mineral fiber roofing and have a good stock of old mineral fiber shingles on hand for repair work.



■ The roof of this commercial building is covered with the distinctive, thin, gray tiles more properly called mineral fiber shingles.

CLAY TILE

Clay roof tile is a permanent, lifetime roofing material that was particularly popular during the 'teens and 'twenties as a cladding for ornamental roofs on Milwaukee area buildings. The most common styles are the half-round Mission and Roman tiles that add a high-profile, distinctive character to a roof. Flat clay shingle tile was also occasionally used for commercial buildings, but was more popular for residential work. A clay tile roof should always be retained, not only for its aesthetic value, but also because it is one of the most durable roofing materials known and can easily last more than 100 years. For repair work, always select a roofing contractor who has experience in clay tile work. Some contractors routinely keep a supply of salvaged clay tile on hand. The complete replacement of a missing clay tile roof is still possible because high-quality



■ The Spanish clay tile roof is a handsome ornament to this 1920s commercial building.

clay tile is still being manufactured today. Any modern replacement tiles used in Wisconsin, however, must be specifically rated to withstand the freeze-thaw cycles of our harsh, northern climate. A new cement tile roof, in some cases, might be an acceptable substitute for a missing or badly damaged clay tile roof, but only if the new material matches the size, color and profile of the historic roofing tiles. Clay tile is generally preferable to concrete tile, however, because it does not fade.

CEMENT TILES

Half-round Mission or Roman style cement tiles were often installed on decorative roofs during the 1920s as an alternative to metal tiles and the more expensive clay tiles. Today, however, the cost difference between new clay and new cement tiles is

often insignificant. Many original cement tile roofs are still in good condition after 60-plus years of service. The principal problems with old cement tile roofs are fading and the failure of the roof flashings, rather than an actual deterioration of the roofing material itself. As with slate and clay tiles, cement roof tiles can be carefully removed to replace the flashings and then reinstalled. Historic cement roofing tiles should be preserved whenever possible. A roofing contractor

who specializes in tile roof repairs may have some salvaged, matching cement tiles on hand for repairs.



■ The cement tile roof on this 1920s commercial building was intended to be a less expensive, but equally durable, alternative to clay tile.

SLATE

Genuine slate is a natural stone product that is still the king of roofing materials in terms of longevity. Although initially expensive to install, slate is actually one of the least expensive roofing materials when its cost is calculated over a typical service life of 75 to more than 100 years. A slate roof is very heavy, and the roof structure beneath it must be designed to carry the load. Existing slate roofs are very valuable and should always be preserved because repair is typically much less costly than total replacement with a lesser-quality roofing material such as asphalt shingles. Individual, broken or missing slates can be replaced by an experienced roofer. Contractors who make a specialty of slate work often maintain an inventory of salvaged and new slates in order to make repairs that will match the size and color of the original materials as much as possible.



■ A slate roof is one of the handsomest and most durable assets a building can have.

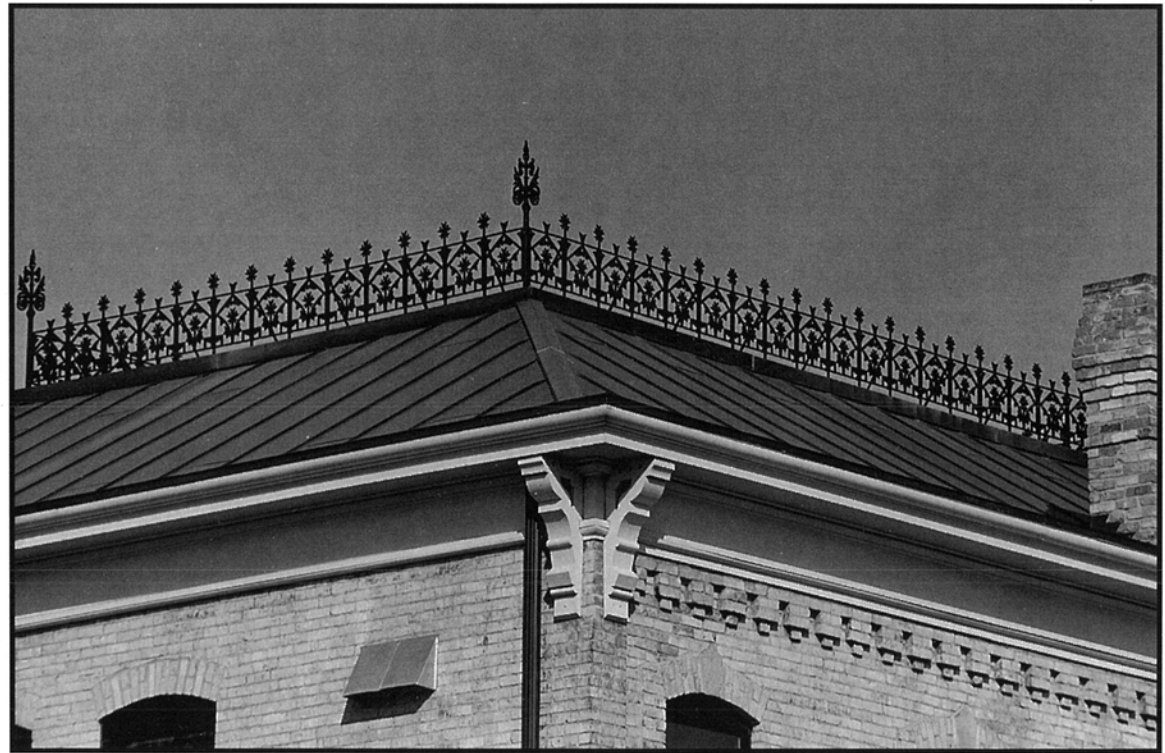
ROOF CRESTING

One of the surprises that may be revealed by research or rehabilitation work on an older commercial building is that the roof may have originally been trimmed with ornamental iron cresting. Tell-tale screw holes might remain in the wooden roof sheathing, or an old photograph may depict the cresting. Many crestings were removed during the scrap iron drives for the two world wars, and others were discarded simply because of changing tastes and to make it easier to install new roofing. Original roof cresting is very rare today and should be preserved whenever possible.

Replacing a missing cresting with one of the fine reproductions that are available today is encouraged, but the following suggestions should be kept in mind:

1. In most cases, cresting is appropriate only for pre-1900 structures but not all of these buildings were fitted with cresting. Cresting was most popular between 1870 and 1885.
2. You should not use wrought iron porch railings for roof cresting. They are too tall and spindly to look authentic.
3. Match the style of the cresting with the building.
4. Cresting should be installed by skilled roofers or sheet metal workers who can assure you of a leak-free, lasting installation.

The iron crestings originally used for small commercial buildings were either cast in a mold or hand-forged by a blacksmith, and both types are still available today. Cast iron is usually more affordable and easier to find today, just as it was 100 years ago. ■

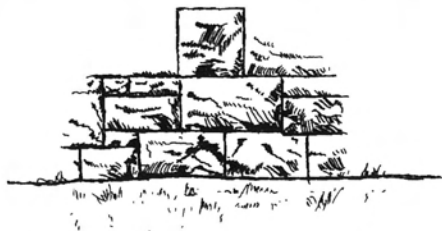


■ The handsome cast iron cresting adds an elegant finishing touch to this Victorian commercial building

GLOSSARY



ASHLAR - A squared or rectangular building stone.

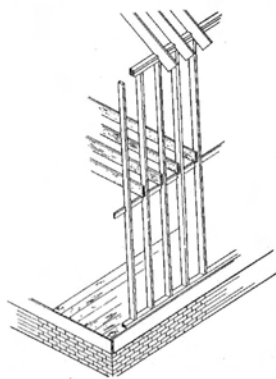


ASTRAGAL - The moulding strip covering the junction of a pair of doors.

BACKBAND - The projecting outer moulding of a door or window casing or a sign board.

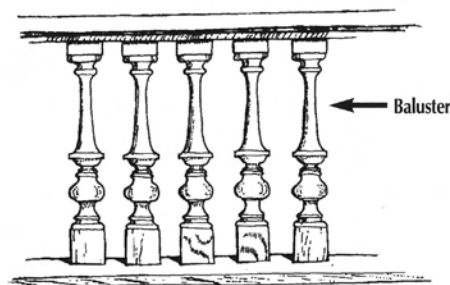
BACK-SET - Distance from the outside edge of a lock to the center of the door knob.

BALLOON FRAME - Type of wood frame construction with wall studs extending uninterrupted from the foundation to the top of a wall.

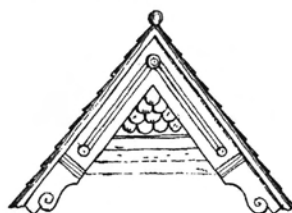


BALUSTER - An upright member supporting a railing or banister.

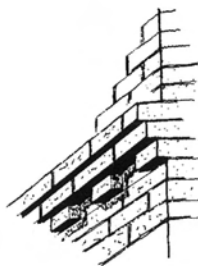
BALUSTRADE - A railing assembly composed of a handrail which is supported by balusters.



BARGEBOARD - A wide ornamental fascia board hung from the eaves or in a gable.

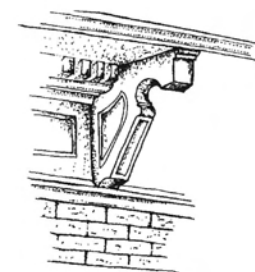


BELT COURSE - A continuous horizontal band on an exterior wall. Also called a "string course." Can be made of brick, stone or wood.

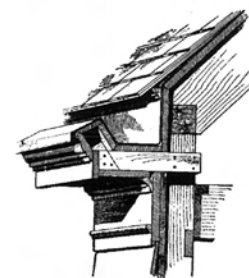


BEVEL SIDING - A traditional horizontal wooden siding material that tapers to a thin edge and is lapped over the board below it.

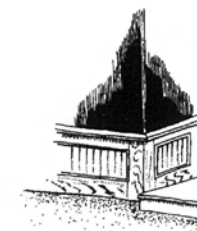
BRACKETS - Supporting members of wood, stone or metal often used for both decorative and structural purposes and generally found under projecting features such as eaves or cornices. Also, the supports for a balcony.



BUILT-IN-GUTTER - A gutter set into the building cornice so as to be invisible from the ground.

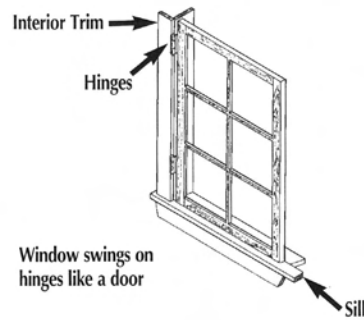


BULKHEAD - The area beneath a storefront display window.



CAPITAL - The head or topmost part of a round column or rectangular pilaster.

CASEMENT - A window that is hinged on one side and swings open like a door.



CHAMFER - A beveled edge.



CLAPBOARDS - See "Bevel siding."

COPING - The capping or top course of a wall, usually intended to protect the wall below it from weather.

CORBELING - A series of stepped or overlapping pieces of brick or stone, often forming a support.



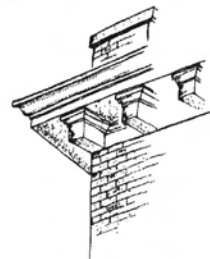
CORBEL TABLE - A series of corbels supporting upper mouldings or a cornice. Commonly used below the eaves line.

CORINTHIAN - A classical style of architecture characterized by columns with capitals that are adorned with acanthus leaf ornament.

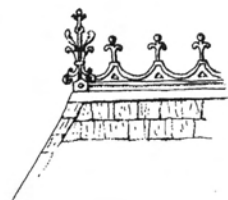


CORNER BOARDS - Vertical trim boards installed at the outside and inside corners of a wall covered with wooden siding.

CORNICE - Generally refers to a horizontal, projecting moulding that crowns the top of a wall. In classical architecture, it is the uppermost part of the entablature.



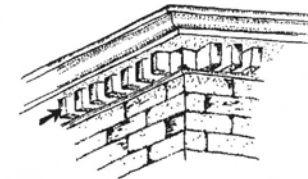
CRESTING - Wood or metal ornament used to trim the ridge of a roof.



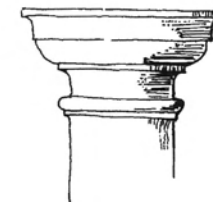
CRICKET - See "Saddle."

CUT NAIL - The correct name for an old-fashioned, "square" nail.

DENTIL BLOCKS - An ornamental moulding composed of a series of evenly-spaced small blocks usually placed under a cornice or overhang.



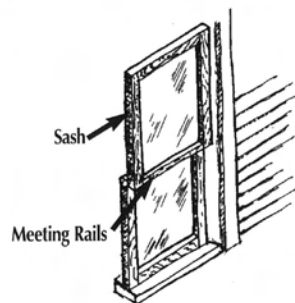
DORIC - A style of classical architecture characterized by columns with simple round capitals without carving.



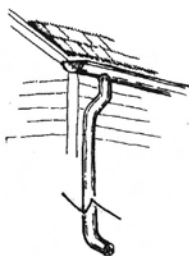
DORMER - A window projecting from a roof.



DOUBLE HUNG WINDOW - The most common type of wooden window in older buildings. Composed of two windows, each called a sash, that slide up and down in separate channels.



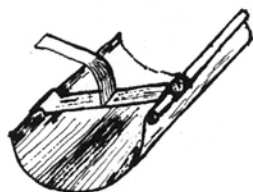
DOWNSPOUT - The vertical pipe that drains water from an eaves trough or gutter.



DRY ROT - Traditionally refers to the decay in wood that usually results from moisture rising from the ground beneath or around a foundation. Today the term is often used to describe rotted wood in a soft, dry, crumbly condition.

EAVES - The part of a roof that projects beyond the side walls of a building.

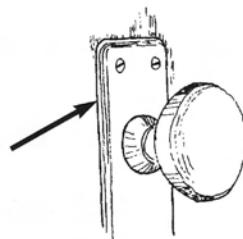
EAVES TROUGH - A half-round style of gutter.



EFFLORESCENCE - White, powdery substance sometimes found on mortar joints and brick.

EPOXY - A space-age plastic-like material that hardens through a chemical reaction created by mixing a special catalyst or hardener with a resin or paste.

ESCUTCHEON - The decorative plate on a door on which a door knob is mounted.



ETCHED GLASS - Similar to sandblasted glass, it has a grainy, frosted appearance made by eroding the surface with acids.

FACADE - The main elevation or entrance front of a building.

FASCIA BOARD - A finish board attached to the projecting ends of the roof rafters.

FENESTRATION - The arrangement of windows in a wall.

FIGURED GLASS - Glass that is molded with a decorative, light-obscuring pattern on one side.

FINIAL - A carved, turned, or sawn ornament made of wood, metal, or stone that crowns a roof, gatepost, or some other peak.



FISHSCALE SHINGLES - Wood or terra cotta shingles with rounded butts.



FLASHING - Strips of metal or rubber-like material installed on roof areas vulnerable to water leakage such as in valleys or around chimneys. Also used at the top of window and door openings.

FLUE - Hollow area of a chimney that conducts fumes, heat, and other products of combustion away from the building.

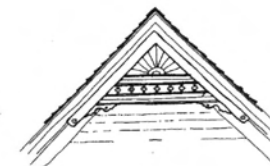
FLUTING - Shallow vertical grooves on a column.

FOOTING - The lowest part of a foundation system that rests directly on the soil and serves as a base for the foundation wall. Usually made of concrete or limestone.

GABLE - The triangular upper portion of a wall beneath a peaked roof.



GABLE ORNAMENT - Ornamental trim beneath the peak of a gable.

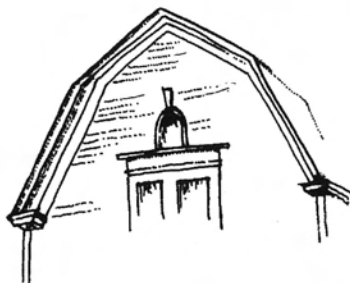


GABLE ROOF - A roof that has a ridge at the center and slopes in two directions.

GALVANIC ACTION - Chemical corrosion caused by the meeting of two dissimilar metals in a moist or wet environment.

GALVANIZING - A coating of zinc applied to prevent iron or steel from rusting.

GAMBREL ROOF - Roof with two sloping planes of differing pitches on either side of a ridge, the lower plane being the steeper one.



GLAZING - The transparent or semi-transparent glass or plastic in a window.

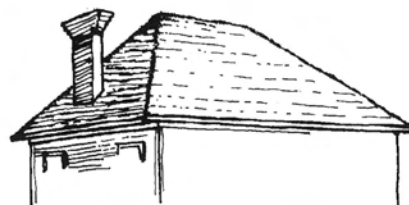
GLUE CHIP GLASS - Opaque glass that has the appearance of frozen ice crystals. Often used in doors and transoms.

GRADE - At the level of the ground.

GUTTER - Metal trough attached or built-in to the edge of a roof for the purpose of conducting rain water off the roof and away from the walls of the building.

HIGH-BACK GUTTER - A traditional type of rain gutter made in many different styles that is attached to the roof by means of an integral metal flange that extends a few inches beneath the first row of roofing shingles.

HIP ROOF - A roof with slopes on all four sides meeting at a central point or ridge.



HOOD MOULD - A projecting moulding made of wood, brick or stone above an arch, door, or window.



INSULATING GLASS - A factory-prepared "sandwich" of two sheets of glass with a sealed air space in between that reduces heat loss.

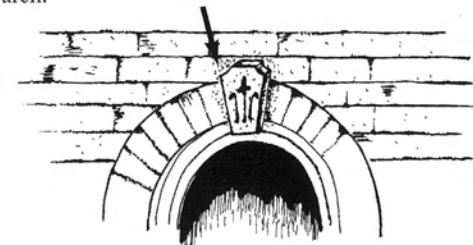
IONIC - A style of classical architecture characterized by columns with capitals with large spiral scrolls, called volutes.



JAMB - The top and side members of door and window frames.

JOIST - Plank placed on edge to which floor and ceiling materials are attached.

KEystone - The topmost or center brick or stone in an arch.



LATH - Perforated metal sheets or wooden strips that serve as a base for plaster and stucco.

LEAF - One half of a set of double doors.

LEXAN® - The brand name of a popular, clear, polycarbonate (plastic) glazing material that is highly break resistant.

LINTEL - A horizontal beam bridging a window or door opening to carry the weight of the wall above the opening.



MEETING RAIL - The horizontal, overlapping rail in a double hung window unit. (See "Double Hung Window" for illustration.)

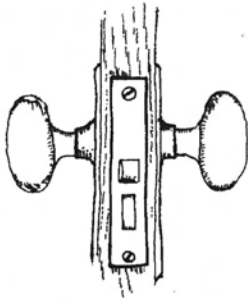
MINERAL FIBER - Formerly called cement asbestos, it is a roof and siding material made from Portland cement, water, and asbestos or another mineral fiber which is molded under intense pressure to make thin, slate-like shingles or sheets.

MINERAL WOOL - Term used to collectively describe insulation materials made of fiberglass, rock wool or slag wool, all of which have a soft, wool-like texture and composition.

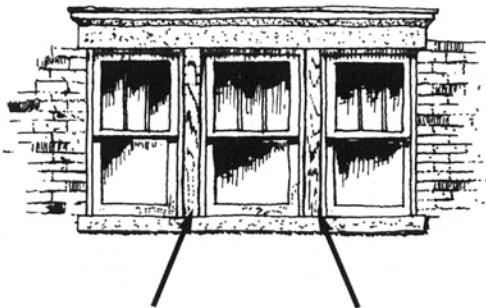
MITER CUT - A bevel cut used to produce a fine finished appearance when joining two pieces of wood together at an angle.

MORTAR - Mixture of sand, cement, water and, usually, lime.

MORTISE LOCK - A box-like metal locking mechanism that is made to fit into a pocket called a "mortise" in the edge of a door. Mortise locks were used for most interior and exterior doors made before 1935.



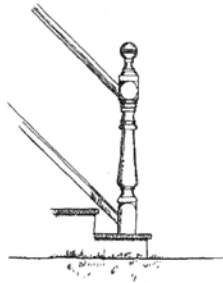
MULLION - A vertical member that separates window units grouped in a close series.



MUNTIN - The strips that separate glass panes in a sash. Also called glazing bars.



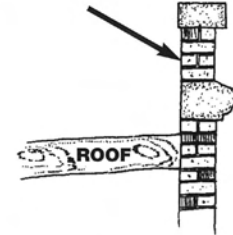
NEWEL POST - Main upright member that supports the handrails of a staircase.



ORIEL - A projecting window supported on brackets or corbels.



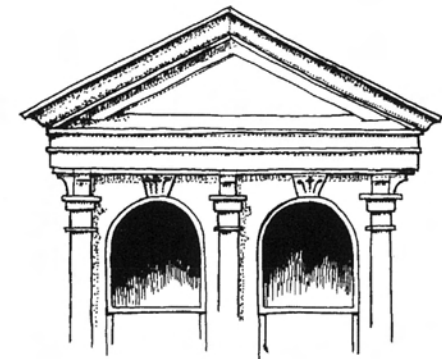
PARAPET WALL - A low wall at the edge of a roof or terrace.



PARTING STRIP - Thin vertical piece of wood that separates the upper and lower sash of a double-hung window.

PATTERNED GLASS - A catch-all term used to describe all special purpose glass that features an obscured surface to admit light without permitting vision through it.

PEDIMENT - The triangular face of a roof gable, especially on a classical style building or any similar form above a door, window, or on a porch roof.



PENT ROOF - A roof with only a single sloping plane, sometimes a small ornamental roof found projecting from a wall or parapet.

PIER - An upright structure of masonry that serves as support.

PILASTER - A square or rectangular representation of a column that projects from a wall surface.

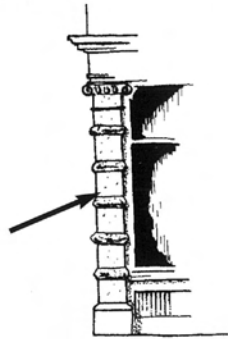


PLATE GLASS - A premium quality clear glass made by rolling sheets of molten glass that are finely polished to remove all blemishes and distortion.

PLATES - Horizontal pieces of framing lumber at the top and bottom of wood-framed walls to which the studs are fastened.

PLEXIGLAS® - The brand name of a popular clear acrylic substitute for common window glass. Although many times stronger than glass, it can still break. See "Lexan®."

PLUMB - Means that an object such as a post or wall is perfectly vertical and stands at a 90 degree angle to a level surface.

PRIME WINDOW - Refers to the principal window assembly that is an inseparable part of the building, as opposed to a storm window.

PRISM GLASS - Glass that has a smooth outer surface and an inner, molded surface composed of many tiny, faceted prisms. It can refocus light to areas where it is needed on the interior.

PUTTY - A mixture of calcium carbonate, linseed oil, and other ingredients, that was used for filling holes and

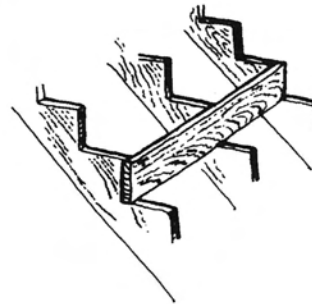
installing window glass. This material is not the same as modern glazing compound, which is also often called putty.

RAFTER - Usually a sloping member that supports the roof sheathing and roofing material.

REHABILITATION - Renewing old buildings for modern living.

RESTORATION - The rejuvenation and/or replication of historic architectural features.

RISER - The vertical part of a step.

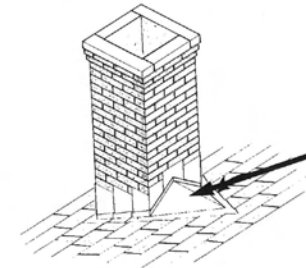


R-VALUE - Measure of a building material's ability to hold back heat flow. The greater the R-value, the better a material will insulate.

ROUNDHEAD WINDOW - A window with a semicircular top.



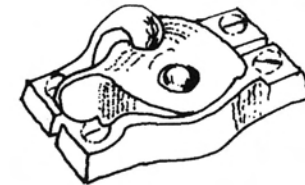
SADDLE - Small, inverted, V-shaped assembly placed at the back side of a chimney to divert water away from the chimney. Also called a "cricket."



SANDBLASTED GLASS - Glass with a grainy, frosted finish made by eroding the surface with a high-pressure stream of fine sand or other abrasives. (See also Etched Glass.)

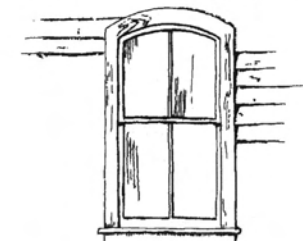
SASH - Wood or metal frame into which glass panes are set. (See "Doublehung Window" for illustration.)

SASH LOCK - Hardware used to lock two window sash together.



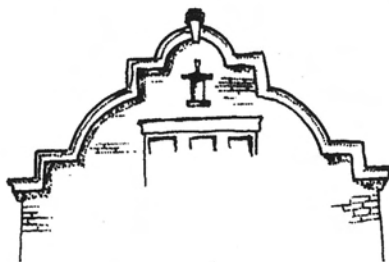
SASH WEIGHT - An iron weight used to balance a sash so that it will remain in any desired vertical position when opened.

SEGMENTAL ARCH WINDOW - A window with a shallow curved arch formed by the segment of a circle.



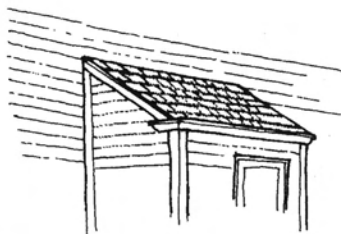
SHAKE - A thick, rustic-looking wooden roofing material made by splitting, rather than sawing, a log. It is not suitable for use on Milwaukee's existing historic buildings.

SHAPED GABLE - A type of ornamental gable with a curving or stepped profile.



SHEATHING - Boards applied over the wall studs to which the finish wall material such as bevel wood siding, brick or stucco is applied.

SHED ROOF - A roof type composed of a single sloping plane.

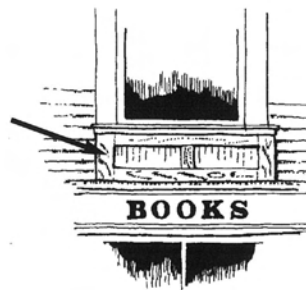


SILL - The bottom member of a window frame.

SOFFIT - Refers to the underside of an assembly such as a roof overhang, staircase, arch, or box beam.



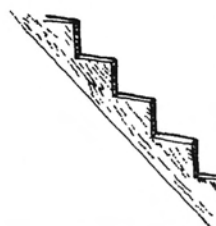
SPANDREL - The triangular space between the curve of an arch and an enclosing right angle. Also commonly used to describe a panel below a window.



STANDING GUTTER - See "Yankee gutter."

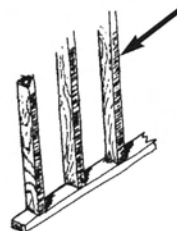
STOOP - An elevated, uncovered platform at the entrance to a building that is reached by a flight of stairs. An uncovered porch.

STRINGER - Sloping wooden members that provide the main support for risers, treads and other parts of a staircase.



STUCCO - Outside finish plaster material that is rich in Portland cement.

STUDS - Vertical framing members in a wood-framed building.



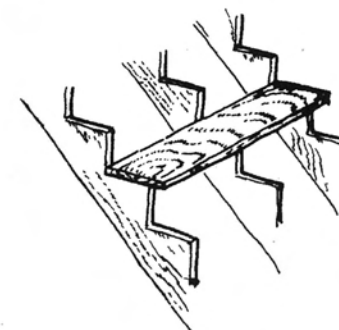
TERRA COTTA - A fired clay building material.

THRESHOLD - The bottom member of a door frame.

TRANSOM - Small window, sometimes movable, located over a door or another window.



TREAD - Called a step by many people, it is the horizontal part of a typical staircase.

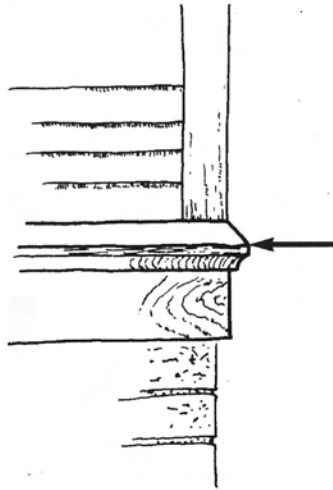


TUCKPOINTING - Refilling deteriorated mortar joints with fresh mortar.

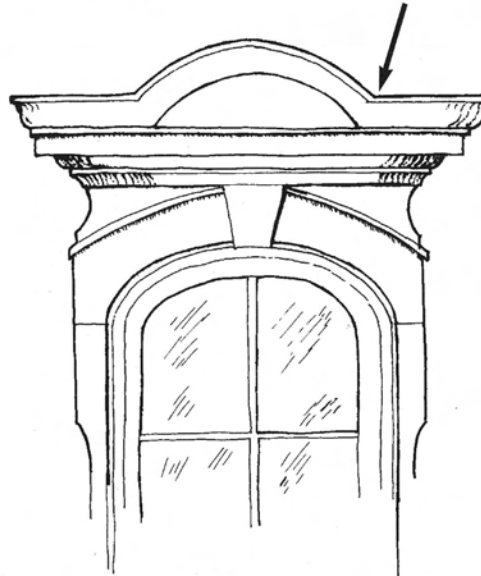
TURRET - A small tower at the corner of a building that usually extends above the eaves line.

VAPOR BARRIER - Moisture-resistant material installed in a wall or on the ground to retard the passage of moisture.

WATER TABLE - A projecting moulding or angled strip located at the bottom of a wall that is designed to divert run-off water away from the wall or masonry foundation below it.

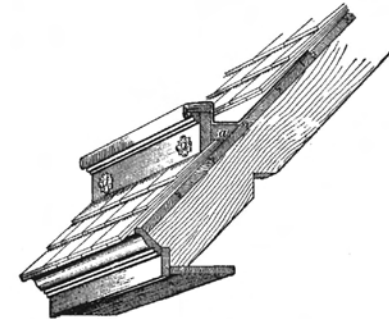


WINDOW CAP - Decorative element that trims the top of a window surround.



WYTHE - One unit thickness of a masonry wall.

YANKEE GUTTER - Also called a standing gutter, it is an archaic V-shaped gutter mounted on the surface of the roof about a foot above the roof edge used to collect rain water and divert it to a downspout. A Yankee gutter allowed the full view of decorative or ornamental woodwork on the fascia.



ZINC - A rust-resistant metal. Sheet zinc was a popular building material for ornamental metal work 100 years ago. Zinc is also used as a thin coating or plating over steel nails or thin sheet steel to prevent rust. See "Galvanizing."



■ The Hochmuth Building, 1137 N. Old World Third St.

GOOD FOR *B*USINESS

Whether it's an ornate Victorian store encrusted with intricate ornaments or a streamlined 1930s diner with sleek chrome accents, small commercial buildings are an indispensable part of America's urban scene. In an age when the public's appreciation of the architecture of old houses has reached an all-time high, older commercial buildings are often still viewed as utilitarian structures of little architectural importance. Too frequently they are indiscriminately remodeled with little thought to preserving their original features. Every time this happens, part of America's architectural heritage is lost.

This new book seeks to show owners of commercial structures how they can rehabilitate their buildings to suit today's business needs without sacrificing the special features that make older buildings appealing to tenants and inviting to customers.

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- **Demonstrates how you can rediscover your building's original appearance from clues and hidden features.**
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- **Details in plain language the repair and maintenance of such features as storefronts, masonry, and roofing.**
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Written in easy-to-understand language *Good for Business* is simply the definitive guide to renovating the exteriors of older commercial buildings. It is the companion volume to *As Good As New: A guide to renovating the exterior of your older house*.

Good for Business was written in Milwaukee, Wisconsin and quickly gained acceptance around the country as a resource for architects, contractors, building owners and city planners. The book contains some references to Milwaukee, but most of the material is applicable to renovating the fine stock of older commercial buildings that were built prior to 1940 throughout America.

Authors: **Paul Jakubovich** is an historic preservation consultant and instructor based in Milwaukee, Wisconsin. He is the author of the books *As Good As New: A guide to renovating the exterior of your older house* and *Living With History: A guide to the preservation standards for historically designated houses in Milwaukee*. **Les Vollmert**, Milwaukee's former Historic Preservation Officer, has written and extensively lectured on historic preservation. ■

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